



SEQUENCE LISTING

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<140> 10/572,638

<141> 2006-12-22

<150> PCT/US2004/03097

<151> 2004-09-17

<150> 60/604,722

<151> 2004-08-27

<150> 60/503,460

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<160> 321

<170> PatentIn Ver. 3.3

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Gln Glu Met Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
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```

```

Asn Asp Met Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
      100            105            110

```

```

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
      115            120            125

```

```

Asn Cys Thr Asn Val Thr Asn Ala Thr Asn Asn Thr Tyr Asn Gly Glu
      130            135            140

```

```

Met Lys Asn Cys Ser Phe Asn Ile Thr Thr Glu Leu Arg Asp Lys Lys
      145            150            155            160

```

```

Lys Lys Glu Tyr Ala Leu Phe Tyr Arg Leu Asp Ile Val Pro Leu Asn
      165            170            175

```

```

Glu Asn Ser Ser Glu Tyr Arg Leu Ile Asn Cys Asn Thr Ser Ala Ile
      180            185            190

```

Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Asp	Pro	Ile	Pro	Ile	His	Tyr
	195						200					205			
Cys	Ala	Pro	Ala	Gly	Tyr	Ala	Ile	Leu	Lys	Cys	Asn	Asn	Lys	Thr	Phe
	210					215					220				
Asn	Gly	Thr	Gly	Pro	Cys	Asn	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His
225					230					235					240
Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu
				245					250					255	
Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Leu	Thr	Asp	Asn	Ala
			260					265					270		
Lys	Thr	Ile	Ile	Val	Gln	Leu	Asn	Glu	Ser	Val	Glu	Ile	Val	Cys	Thr
	275						280					285			
Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Met	Arg	Ile	Gly	Pro	Gly	Gln
	290					295					300				
Thr	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His
305					310					315					320
Cys	Asn	Ile	Ser	Glu	Asp	Lys	Trp	Asn	Lys	Thr	Leu	Gln	Gln	Val	Ala
				325					330					335	
Glu	Lys	Leu	Gly	Lys	His	Phe	Pro	Asn	Lys	Thr	Ile	Thr	Phe	Glu	Pro
			340					345					350		
Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Arg
		355					360					365			
Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Lys	Leu	Phe	Asn	Ser	Thr	Tyr
	370					375					380				
Asn	Asn	Asn	Thr	Asn	Ser	Asn	Ser	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile
385					390					395					400
Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Gly	Val	Gly	Gln	Ala	Met	Tyr	Ala
				405					410					415	
Pro	Pro	Ile	Ala	Gly	Asn	Ile	Thr	Cys	Lys	Ser	Asn	Ile	Thr	Gly	Leu
			420					425					430		
Leu	Leu	Thr	Arg	Asp	Gly	Gly	Lys	Glu	Asn	Thr	Thr	Glu	Thr	Phe	Arg
		435					440					445			
Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys
	450					455					460				
Tyr	Lys	Val	Val	Glu	Ile	Lys	Pro	Leu	Gly	Val	Ala	Pro	Thr	Glu	Ala
465					470					475					480
Lys	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Leu	Gly	Ala
				485					490					495	

Val	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala			
			500					505						510				
Ser	Ile	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val			
		515					520					525						
Gln	Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Met			
		530				535					540							
Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu			
545					550					555					560			
Ala	Met	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly			
				565					570					575				
Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Ala	Val	Pro	Trp	Asn	Ser	Ser			
			580					585					590					
Trp	Ser	Asn	Lys	Ser	Leu	Asp	Asp	Ile	Trp	Asp	Asn	Met	Thr	Trp	Met			
		595					600					605						
Glu	Trp	Asp	Arg	Glu	Ile	Ser	Asn	Tyr	Thr	Asp	Thr	Ile	Tyr	Arg	Leu			
	610					615					620							
Leu	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu	Gln	Asp	Leu	Leu			
625					630					635					640			
Ala	Leu	Asp	Ser	Trp	Glu	Asn	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Asn			
				645					650					655				
Trp	Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile			
			660					665					670					
Gly	Leu	Arg	Ile	Ile	Phe	Ala	Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg			
		675					680					685						
Gln	Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Thr	Leu	Thr	Pro	Asn	Pro	Arg			
	690					695					700							
Gly	Pro	Asp	Arg	Leu	Glu	Arg	Ile	Glu	Glu	Glu	Gly	Gly	Glu	Gln	Asp			
705					710					715					720			
Arg	Asp	Arg	Ser	Ile	Arg	Leu	Val	Ser	Gly	Phe	Leu	Ala	Leu	Ala	Trp			
				725					730					735				
Asp	Asp	Leu	Arg	Ser	Leu	Cys	Leu	Phe	Ser	Tyr	His	Arg	Leu	Arg	Asp			
			740					745					750					
Phe	Ile	Leu	Ile	Ala	Ala	Arg	Thr	Val	Glu	Leu	Leu	Gly	Arg	Ser	Ser			
		755					760					765						
Leu	Arg	Gly	Leu	Gln	Arg	Gly	Trp	Glu	Ala	Leu	Lys	Tyr	Leu	Gly	Ser			
	770					775						780						
Leu	Val	Gln	Tyr	Trp	Gly	Gln	Glu	Leu	Lys	Lys	Ser	Ala	Ile	Ser	Leu			
785					790					795					800			

Leu Asp Thr Ile Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Ile Ile
805 810 815

Glu Val Val Gln Arg Ala Cys Arg Ala Ile Leu Asn Ile Pro Arg Arg
820 825 830

Ile Arg Gln Gly Phe Glu Ala Ala Leu Leu
835 840

<210> 6

<211> 842

<212> PRT

<213> Human immunodeficiency virus

<400> 6

Met Arg Val Met Gly Ile Leu Arg Asn Cys Gln Gln Trp Trp Ile Trp
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Gly Ile Leu Gly Phe Trp Met Leu Met Ile Cys Asn Val Val Gly Asn
20 25 30

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Lys
35 40 45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Lys Glu Val
50 55 60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
65 70 75 80

Gln Glu Met Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
85 90 95

Asn Asp Met Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
100 105 110

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
115 120 125

Asn Cys Arg Asn Val Thr Asn Ala Thr Asn Asn Thr Tyr Asn Glu Glu
130 135 140

Ile Lys Asn Cys Ser Phe Asn Ile Thr Thr Glu Leu Arg Asp Lys Lys
145 150 155 160

Lys Lys Val Tyr Ala Leu Phe Tyr Arg Leu Asp Ile Val Pro Leu Asn
165 170 175

Glu Asn Ser Ser Glu Tyr Arg Leu Ile Asn Cys Asn Thr Ser Ala Ile
180 185 190

Thr Gln Ala Cys Pro Lys Val Ser Phe Asp Pro Ile Pro Ile His Tyr
195 200 205

Cys Ala Pro Ala Gly Tyr Ala Ile Leu Lys Cys Asn Asn Lys Thr Phe

210					215					220					
Asn	Gly	Thr	Gly	Pro	Cys	Asn	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His
225					230					235					240
Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu
				245					250					255	
Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Leu	Thr	Asn	Asn	Ala
			260					265					270		
Lys	Thr	Ile	Ile	Val	His	Leu	Asn	Glu	Ser	Val	Glu	Ile	Val	Cys	Thr
		275					280					285			
Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	Gly	Pro	Gly	Gln
	290					295					300				
Thr	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His
305					310					315					320
Cys	Asn	Ile	Ser	Glu	Asp	Lys	Trp	Asn	Lys	Thr	Leu	Gln	Arg	Val	Ser
				325					330					335	
Lys	Lys	Leu	Lys	Glu	His	Phe	Pro	Asn	Lys	Thr	Ile	Lys	Phe	Glu	Pro
			340					345					350		
Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Arg
		355					360					365			
Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Lys	Leu	Phe	Asn	Ser	Thr	Tyr
	370					375					380				
Asn	Asn	Asn	Thr	Asn	Ser	Asn	Ser	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile
385						390					395				400
Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Glu	Val	Gly	Arg	Ala	Met	Tyr	Ala
				405					410					415	
Pro	Pro	Ile	Ala	Gly	Asn	Ile	Thr	Cys	Lys	Ser	Asn	Ile	Thr	Gly	Leu
			420					425					430		
Leu	Leu	Thr	Arg	Asp	Gly	Gly	Lys	Lys	Asn	Thr	Thr	Glu	Ile	Phe	Arg
		435					440					445			
Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys
	450					455					460				
Tyr	Lys	Val	Val	Glu	Ile	Lys	Pro	Leu	Gly	Val	Ala	Pro	Thr	Lys	Ala
465					470					475					480
Lys	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala
				485				490						495	
Val	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala
			500				505						510		
Ser	Ile	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val

515					520					525					
Gln	Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Met
530						535					540				
Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Thr	Arg	Val	Leu
545					550					555					560
Ala	Ile	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly
				565					570					575	
Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Ala	Val	Pro	Trp	Asn	Ser	Ser
			580					585					590		
Trp	Ser	Asn	Lys	Ser	Gln	Glu	Asp	Ile	Trp	Asp	Asn	Met	Thr	Trp	Met
		595					600					605			
Gln	Trp	Asp	Arg	Glu	Ile	Ser	Asn	Tyr	Thr	Asp	Thr	Ile	Tyr	Arg	Leu
610						615					620				
Leu	Glu	Asp	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu	Lys	Asp	Leu	Leu
625					630					635					640
Ala	Leu	Asp	Ser	Trp	Lys	Asn	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Asn
				645					650					655	
Trp	Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile
			660					665					670		
Gly	Leu	Arg	Ile	Ile	Phe	Ala	Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg
		675					680					685			
Gln	Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Thr	Leu	Thr	Pro	Asn	Pro	Arg
690						695					700				
Gly	Pro	Asp	Arg	Leu	Gly	Arg	Ile	Glu	Glu	Glu	Gly	Gly	Glu	Gln	Asp
705					710				715					720	
Arg	Asp	Arg	Ser	Ile	Arg	Leu	Val	Ser	Gly	Phe	Leu	Ala	Leu	Ala	Trp
				725					730					735	
Asp	Asp	Leu	Arg	Ser	Leu	Cys	Leu	Phe	Ser	Tyr	His	Arg	Leu	Arg	Asp
		740						745					750		
Phe	Ile	Leu	Val	Ala	Ala	Arg	Ala	Val	Glu	Leu	Leu	Gly	Arg	Ser	Ser
		755					760					765			
Leu	Arg	Gly	Leu	Gln	Arg	Gly	Trp	Glu	Ala	Leu	Lys	Tyr	Leu	Gly	Ser
770						775					780				
Leu	Val	Gln	Tyr	Trp	Gly	Leu	Glu	Leu	Lys	Lys	Ser	Ala	Ile	Ser	Leu
785					790					795					800
Leu	Asp	Thr	Ile	Ala	Ile	Ala	Val	Ala	Glu	Gly	Thr	Asp	Arg	Ile	Ile
				805				810						815	
Glu	Leu	Ile	Gln	Arg	Ile	Cys	Arg	Ala	Ile	Arg	Asn	Ile	Pro	Arg	Arg

820					825					830				
Ile	Arg	Gln	Gly	Phe	Glu	Ala	Ala	Leu	Gln					
		835					840							
<210> 7														
<211> 842														
<212> PRT														
<213> Human immunodeficiency virus														
<400> 7														
Met	Arg	Val	Met	Gly	Ile	Leu	Arg	Asn	Cys	Gln	Gln	Trp	Trp	Ile
1				5					10					15
Gly	Ile	Leu	Gly	Phe	Trp	Met	Leu	Met	Ile	Cys	Asn	Val	Val	Gly
			20					25					30	Asn
Leu	Trp	Val	Thr	Val	Tyr	Tyr	Gly	Val	Pro	Val	Trp	Lys	Glu	Ala
		35					40					45		Lys
Thr	Thr	Leu	Phe	Cys	Ala	Ser	Asp	Ala	Lys	Ala	Tyr	Glu	Lys	Glu
	50					55					60			Val
His	Asn	Val	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn
65						70					75			80
Gln	Glu	Met	Val	Leu	Glu	Asn	Val	Thr	Glu	Asn	Phe	Asn	Met	Trp
			85						90					95
Asn	Asp	Met	Val	Asp	Gln	Met	His	Glu	Asp	Ile	Ile	Ser	Leu	Trp
		100						105					110	Asp
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr
		115					120						125	Leu
Asn	Cys	Arg	Asn	Val	Thr	Asn	Ala	Thr	Asn	Asn	Thr	Tyr	Asn	Glu
	130						135				140			Glu
Ile	Lys	Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	Glu	Leu	Arg	Asp	Lys
145						150					155			160
Lys	Lys	Val	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Ile	Val	Pro	Leu
			165						170					175
Glu	Asn	Ser	Ser	Glu	Tyr	Arg	Leu	Ile	Asn	Cys	Asn	Thr	Ser	Ala
			180					185					190	Ile
Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Asp	Pro	Ile	Pro	Ile	His
		195					200					205		Tyr
Cys	Ala	Pro	Ala	Gly	Tyr	Ala	Ile	Leu	Lys	Cys	Asn	Asn	Lys	Thr
	210					215					220			Phe
Asn	Gly	Thr	Gly	Pro	Cys	Asn	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr
225						230					235			240

Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	245	250	255
Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Leu	Thr	Asn	Asn	Ala	260	265	270
Lys	Thr	Ile	Ile	Val	His	Leu	Asn	Glu	Ser	Val	Glu	Ile	Val	Cys	Thr	275	280	285
Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	Gly	Pro	Gly	Gln	290	295	300
Thr	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	305	310	315
Cys	Asn	Ile	Ser	Glu	Asp	Lys	Trp	Asn	Lys	Thr	Leu	Gln	Arg	Val	Ser	325	330	335
Lys	Lys	Leu	Lys	Glu	His	Phe	Pro	Asn	Lys	Thr	Ile	Lys	Phe	Glu	Pro	340	345	350
Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Arg	355	360	365
Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Lys	Leu	Phe	Asn	Ser	Thr	Tyr	370	375	380
Asn	Asn	Asn	Thr	Asn	Ser	Asn	Ser	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	385	390	395
Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Glu	Val	Gly	Arg	Ala	Met	Tyr	Ala	405	410	415
Pro	Pro	Ile	Ala	Gly	Asn	Ile	Thr	Cys	Lys	Ser	Asn	Ile	Thr	Gly	Leu	420	425	430
Leu	Leu	Thr	Arg	Asp	Gly	Gly	Lys	Lys	Asn	Thr	Thr	Glu	Ile	Phe	Arg	435	440	445
Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	450	455	460
Tyr	Lys	Val	Val	Glu	Ile	Lys	Pro	Leu	Gly	Val	Ala	Pro	Thr	Lys	Ala	465	470	475
Lys	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	485	490	495
Val	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	500	505	510
Ser	Ile	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	515	520	525
Gln	Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Met	530	535	540

Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Thr Arg Val Leu
 545 550 555 560
 Ala Ile Glu Arg Tyr Leu Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly
 565 570 575
 Cys Ser Gly Lys Leu Ile Cys Thr Thr Ala Val Pro Trp Asn Ser Ser
 580 585 590
 Trp Ser Asn Lys Ser Gln Glu Asp Ile Trp Asp Asn Met Thr Trp Met
 595 600 605
 Gln Trp Asp Arg Glu Ile Ser Asn Tyr Thr Asp Thr Ile Tyr Arg Leu
 610 615 620
 Leu Glu Asp Ser Gln Asn Gln Gln Glu Lys Asn Glu Lys Asp Leu Leu
 625 630 635 640
 Ala Leu Asp Ser Trp Lys Asn Leu Trp Asn Trp Phe Asp Ile Thr Asn
 645 650 655
 Trp Leu Trp Tyr Ile Lys Ile Phe Ile Met Ile Val Gly Gly Leu Ile
 660 665 670
 Gly Leu Arg Ile Ile Phe Ala Val Leu Ser Ile Val Asn Arg Val Arg
 675 680 685
 Gln Gly Tyr Ser Pro Leu Ser Phe Gln Thr Leu Thr Pro Asn Thr Arg
 690 695 700
 Gly Pro Asp Arg Leu Gly Arg Ile Glu Glu Glu Gly Gly Glu Gln Asp
 705 710 715 720
 Arg Asp Arg Ser Ile Arg Leu Val Ser Gly Phe Leu Ala Leu Ala Trp
 725 730 735
 Asp Asp Leu Arg Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp
 740 745 750
 Phe Ile Leu Val Ala Ala Arg Ala Val Glu Leu Leu Gly Arg Ser Ser
 755 760 765
 Leu Arg Gly Leu Gln Arg Gly Trp Glu Ala Leu Lys Tyr Leu Gly Ser
 770 775 780
 Leu Val Gln Tyr Trp Gly Leu Glu Leu Lys Lys Ser Ala Ile Ser Leu
 785 790 795 800
 Leu Asp Thr Ile Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Ile Ile
 805 810 815
 Glu Leu Ile Gln Arg Ile Cys Arg Ala Ile Arg Asn Ile Pro Arg Arg
 820 825 830
 Ile Arg Gln Gly Phe Glu Ala Ala Leu Gln
 835 840

<210> 8
<211> 842
<212> PRT
<213> Human immunodeficiency virus

<400> 8

Met	Arg	Val	Met	Gly	Ile	Leu	Arg	Asn	Cys	Gln	Gln	Trp	Trp	Ile	Trp
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Gly	Ile	Leu	Gly	Phe	Trp	Met	Leu	Met	Ile	Cys	Ser	Val	Val	Gly	Asn
			20					25					30		
Leu	Trp	Val	Thr	Val	Tyr	Tyr	Gly	Val	Pro	Val	Trp	Lys	Glu	Ala	Lys
		35					40					45			
Thr	Thr	Leu	Phe	Cys	Ala	Ser	Asp	Ala	Lys	Ala	Tyr	Glu	Arg	Glu	Val
	50					55					60				
His	Asn	Val	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro
65					70					75				80	
Gln	Glu	Met	Val	Leu	Glu	Asn	Val	Thr	Glu	Asn	Phe	Asn	Met	Trp	Lys
				85					90					95	
Asn	Asp	Met	Val	Asp	Gln	Met	His	Glu	Asp	Ile	Ile	Ser	Leu	Trp	Asp
			100					105					110		
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu
		115					120					125			
Asn	Cys	Thr	Asn	Val	Thr	Asn	Ala	Thr	Asn	Asn	Thr	Tyr	Asn	Gly	Glu
	130					135					140				
Met	Lys	Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	Glu	Leu	Arg	Asp	Lys	Lys
145					150					155				160	
Lys	Lys	Glu	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Ile	Val	Pro	Leu	Asn
				165					170					175	
Glu	Asn	Ser	Ser	Glu	Tyr	Arg	Leu	Ile	Asn	Cys	Asn	Thr	Ser	Ala	Ile
			180					185					190		
Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Asp	Pro	Ile	Pro	Ile	His	Tyr
		195					200					205			
Cys	Ala	Pro	Ala	Gly	Tyr	Ala	Ile	Leu	Lys	Cys	Asn	Asn	Lys	Thr	Phe
	210					215					220				
Asn	Gly	Thr	Gly	Pro	Cys	Asn	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His
225					230					235				240	
Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu
				245					250				255		
Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Leu	Thr	Asp	Asn	Ala
			260					265					270		

Lys	Thr	Ile	Ile	Val	Gln	Leu	Asn	Glu	Ser	Val	Glu	Ile	Val	Cys	Thr	275	280	285
Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Met	Arg	Ile	Gly	Pro	Gly	Gln	290	295	300
Thr	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	305	310	315
Cys	Asn	Ile	Ser	Glu	Asp	Lys	Trp	Asn	Lys	Thr	Leu	Gln	Gln	Val	Ala	325	330	335
Glu	Lys	Leu	Gly	Lys	His	Phe	Pro	Asn	Lys	Thr	Ile	Thr	Phe	Glu	Pro	340	345	350
Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Arg	355	360	365
Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Lys	Leu	Phe	Asn	Ser	Thr	Tyr	370	375	380
Asn	Asn	Asn	Thr	Asn	Ser	Asn	Ser	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	385	390	395
Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Gly	Val	Gly	Gln	Ala	Met	Tyr	Ala	405	410	415
Pro	Pro	Ile	Ala	Gly	Asn	Ile	Thr	Cys	Lys	Ser	Asn	Ile	Thr	Gly	Leu	420	425	430
Leu	Leu	Thr	Arg	Asp	Gly	Gly	Lys	Glu	Asn	Thr	Thr	Glu	Thr	Phe	Arg	435	440	445
Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	450	455	460
Tyr	Lys	Val	Val	Glu	Ile	Lys	Pro	Leu	Gly	Val	Ala	Pro	Thr	Glu	Ala	465	470	475
Lys	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Leu	Gly	Ala	485	490	495
Val	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	500	505	510
Ser	Ile	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	515	520	525
Gln	Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Met	530	535	540
Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	545	550	555
Ala	Met	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	565	570	575

Cys Ser Gly Lys Leu Ile Cys Thr Thr Ala Val Pro Trp Asn Ser Ser
580 585 590
Trp Ser Asn Lys Ser Leu Glu Asp Ile Trp Asp Asn Met Thr Trp Met
595 600 605
Glu Trp Asp Arg Glu Ile Ser Asn Tyr Thr Asp Thr Ile Tyr Arg Leu
610 615 620
Leu Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Asp Leu Leu
625 630 635 640
Ala Leu Asp Ser Trp Glu Asn Leu Trp Asn Trp Phe Asp Ile Thr Asn
645 650 655
Trp Leu Trp Tyr Ile Lys Ile Phe Ile Met Ile Val Gly Gly Leu Ile
660 665 670
Gly Leu Arg Ile Ile Phe Ala Val Leu Ser Ile Val Asn Arg Val Arg
675 680 685
Gln Gly Tyr Ser Pro Leu Ser Phe Gln Thr Leu Thr Pro Asn Thr Arg
690 695 700
Gly Pro Asp Arg Leu Glu Arg Ile Glu Glu Glu Gly Gly Glu Gln Asp
705 710 715 720
Arg Asp Arg Ser Ile Arg Leu Val Ser Gly Phe Leu Ala Leu Ala Trp
725 730 735
Asp Asp Leu Arg Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp
740 745 750
Phe Ile Leu Ile Ala Ala Arg Thr Val Glu Leu Leu Gly Arg Ser Ser
755 760 765
Leu Arg Gly Leu Gln Arg Gly Trp Glu Ala Leu Lys Tyr Leu Gly Ser
770 775 780
Leu Val Gln Tyr Trp Gly Gln Glu Leu Lys Lys Ser Ala Ile Ser Leu
785 790 795 800
Leu Asp Thr Ile Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Ile Ile
805 810 815
Glu Val Val Gln Arg Ala Cys Arg Ala Ile Leu Asn Ile Pro Arg Arg
820 825 830
Ile Arg Gln Gly Phe Glu Ala Ala Leu Leu
835 840

<210> 9

<211> 493

<212> PRT

<213> Human immunodeficiency virus

<400> 9

Met	Gly	Ala	Arg	Ala	Ser	Ile	Leu	Arg	Gly	Gly	Lys	Leu	Asp	Thr	Trp
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Glu	Lys	Ile	Arg	Leu	Arg	Pro	Gly	Gly	Lys	Lys	Arg	Tyr	Met	Ile	Lys
			20					25					30		
His	Leu	Val	Trp	Ala	Ser	Arg	Glu	Leu	Glu	Arg	Phe	Ala	Leu	Asn	Pro
		35					40					45			
Gly	Leu	Leu	Glu	Thr	Ser	Glu	Gly	Cys	Lys	Gln	Ile	Met	Lys	Gln	Leu
	50					55					60				
Gln	Pro	Ala	Leu	Gln	Thr	Gly	Thr	Glu	Glu	Leu	Arg	Ser	Leu	Tyr	Asn
65					70					75					80
Thr	Val	Ala	Thr	Leu	Tyr	Cys	Val	His	Glu	Lys	Ile	Glu	Val	Arg	Asp
				85					90					95	
Thr	Lys	Glu	Ala	Leu	Asp	Lys	Ile	Glu	Glu	Glu	Gln	Asn	Lys	Ser	Gln
			100					105					110		
Gln	Lys	Thr	Gln	Gln	Ala	Glu	Ala	Ala	Ala	Asp	Gly	Lys	Val	Ser	Gln
		115					120					125			
Asn	Tyr	Pro	Ile	Val	Gln	Asn	Leu	Gln	Gly	Gln	Met	Val	His	Gln	Ala
	130					135					140				
Ile	Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys	Val	Ile	Glu	Glu	Lys
145					150					155					160
Ala	Phe	Ser	Pro	Glu	Val	Ile	Pro	Met	Phe	Thr	Ala	Leu	Ser	Glu	Gly
				165					170					175	
Ala	Thr	Pro	Gln	Asp	Leu	Asn	Thr	Met	Leu	Asn	Thr	Val	Gly	Gly	His
			180					185					190		
Gln	Ala	Ala	Met	Gln	Met	Leu	Lys	Asp	Thr	Ile	Asn	Glu	Glu	Ala	Ala
		195					200					205			
Glu	Trp	Asp	Arg	Leu	His	Pro	Val	His	Ala	Gly	Pro	Ile	Ala	Pro	Gly
	210					215					220				
Gln	Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr	Ser	Thr
225					230					235					240
Leu	Gln	Glu	Gln	Ile	Ala	Trp	Met	Thr	Ser	Asn	Pro	Pro	Val	Pro	Val
				245					250					255	
Gly	Asp	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	Ile	Val
		260						265					270		
Arg	Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Lys	Gln	Gly	Pro	Lys
	275						280					285			
Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Thr	Leu	Arg	Ala

290					295					300					
Glu	Gln	Ala	Thr	Gln	Asp	Val	Lys	Asn	Trp	Met	Thr	Asp	Thr	Leu	Leu
305					310					315					320
Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Arg	Ala	Leu	Gly
					325					330					335
Pro	Gly	Ala	Ser	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly	Val	Gly
					340					345					350
Gly	Pro	Ser	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser	Gln	Ala
					355					360					365
Asn	Asn	Thr	Asn	Ile	Met	Met	Gln	Arg	Ser	Asn	Phe	Lys	Gly	Pro	Lys
					370					375					380
Arg	Ile	Val	Lys	Cys	Phe	Asn	Cys	Gly	Lys	Glu	Gly	His	Ile	Ala	Arg
385					390					395					400
Asn	Cys	Arg	Ala	Pro	Arg	Lys	Lys	Gly	Cys	Trp	Lys	Cys	Gly	Lys	Glu
					405					410					415
Gly	His	Gln	Met	Lys	Asp	Cys	Thr	Glu	Arg	Gln	Ala	Asn	Phe	Leu	Gly
					420					425					430
Lys	Ile	Trp	Pro	Ser	His	Lys	Gly	Arg	Pro	Gly	Asn	Phe	Leu	Gln	Ser
					435					440					445
Arg	Pro	Glu	Pro	Thr	Ala	Pro	Pro	Ala	Glu	Ser	Phe	Arg	Phe	Glu	Glu
					450					455					460
Thr	Thr	Pro	Ala	Pro	Lys	Gln	Glu	Pro	Lys	Asp	Arg	Glu	Pro	Leu	Thr
465					470					475					480
Ser	Leu	Lys	Ser	Leu	Phe	Gly	Ser	Asp	Pro	Leu	Ser	Gln			
					485					490					

<210> 10

<211> 207

<212> PRT

<213> Human immunodeficiency virus

<400> 10

Met	Gly	Gly	Lys	Trp	Ser	Lys	Ser	Ser	Ile	Val	Gly	Trp	Pro	Ala	Val
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Arg	Glu	Arg	Ile	Arg	Arg	Thr	Glu	Pro	Ala	Ala	Glu	Gly	Val	Gly	Ala
				20				25					30		

Ala	Ser	Gln	Asp	Leu	Asp	Lys	Tyr	Gly	Ala	Leu	Thr	Ser	Ser	Asn	Thr
				35			40					45			

Ala	Thr	Asn	Asn	Ala	Asp	Cys	Ala	Trp	Leu	Glu	Ala	Gln	Glu	Glu	Glu
						55					60				

Glu	Glu	Val	Gly	Phe	Pro	Val	Arg	Pro	Gln	Val	Pro	Leu	Arg	Pro	Met	
65					70					75					80	
Thr	Tyr	Lys	Ala	Ala	Phe	Asp	Leu	Ser	Phe	Phe	Leu	Lys	Glu	Lys	Gly	
				85					90					95		
Gly	Leu	Glu	Gly	Leu	Ile	Tyr	Ser	Lys	Lys	Arg	Gln	Glu	Ile	Leu	Asp	
			100					105					110			
Leu	Trp	Val	Tyr	His	Thr	Gln	Gly	Phe	Phe	Pro	Asp	Trp	Gln	Asn	Tyr	
		115					120					125				
Thr	Pro	Gly	Pro	Gly	Val	Arg	Tyr	Pro	Leu	Thr	Phe	Gly	Trp	Cys	Phe	
	130					135					140					
Lys	Leu	Val	Pro	Val	Asp	Pro	Arg	Glu	Val	Glu	Glu	Ala	Asn	Glu	Gly	
145					150					155					160	
Glu	Asn	Asn	Cys	Leu	Leu	His	Pro	Met	Ser	Gln	His	Gly	Met	Glu	Asp	
				165					170					175		
Glu	Asp	Arg	Glu	Val	Leu	Lys	Trp	Lys	Phe	Asp	Ser	His	Leu	Ala	Arg	
		180						185					190			
Arg	His	Met	Ala	Arg	Glu	Leu	His	Pro	Glu	Tyr	Tyr	Lys	Asp	Cys		
		195					200					205				

<210> 11
 <211> 1491
 <212> DNA
 <213> Human immunodeficiency virus

<400> 11
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 agccgcgagc tggagcgctt cgccctgaac cccggcctgc tggagaccag cgagggctgc 180
 aagcagatca tgaagcagct gcagcccgcc ctgcagaccg gcaccgagga gctgcgcagc 240
 ctgtacaaca ccgtggccac cctgtactgc gtgcacgaga agatcgaggt gcgcgacacc 300
 aaggaggccc tggacaagat cgaggaggag cagaacaaga gccagcagaa gaccagcag 360
 gccgaggccg ccgcccagcg caaggtgagc cagaactacc ccacgtgca gaacctgcag 420
 ggccagatgg tgcaccaggc catcagcccc cgcaccctga acgcctgggt gaaggtgatc 480
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 gccggcccc tgcgccccgg ccagatgcgc gagccccgcg gcagcgacat cgccggcacc 720
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 gacatctaca agcgctggat catcctgggc ctgaacaaga tcgtgcgcat gtacagcccc 840
 gtgagcatcc tggacatcaa gcaggggccc aaggagccct tccgcgacta cgtggaccgc 900
 ttcttcaaga ccctgcgcgc cgagcaggcc acccaggacg tgaagaactg gatgaccgac 960
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 atcgcccgca actgcgcgc cccccgcaag aagggtgct ggaagtgcgg caaggagggc 1260
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 cacaagggcc gcccgggcaa cttcctgcag agccgcccc agccaccgc ccccccgcc 1380

gagagcttcc gcttcgagga gaccaccccc gcccacaagc aggagcccaa ggaccgag 1440
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<210> 12
 <211> 633
 <212> DNA
 <213> Human immunodeficiency virus

<400> 12
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 gacaagtacg gcgccctgac cagcagcaac accgccacca acaacgccga ctgcgcctgg 180
 ctggaggccc aggaggagga ggaggaggtg ggcttccccg tgcgccccca ggtgcccctg 240
 cgcccatga cctacaaggc cgccttcgac ctgagcttct tcctgaagga gaagggcggc 300
 ctggagggcc tgatctacag caagaagcgc caggagatcc tggacctgtg ggtgtaccac 360
 acccagggct tcttccccga ctggcagaac tacacccccg gcccggcgt gcgctacccc 420
 ctgaccttcg gctggtgctt caagctggtg cccgtggacc cccgcgaggt ggaggaggcc 480
 aacgagggcg agaacaactg cctgctgcac cccatgagcc agcacggcat ggaggacgag 540
 gaccgagagg tgctgaagtg gaagttcgac agccacctgg cccgccgcca catggcccgc 600
 gagctgcacc ccgagtacta caaggactgc tga 633

<210> 13
 <211> 852
 <212> PRT
 <213> Human immunodeficiency virus

<400> 13
 Met Arg Val Arg Gly Ile Gln Arg Asn Cys Gln His Leu Trp Arg Trp
 1 5 10 15
 Gly Thr Leu Ile Leu Gly Met Leu Met Ile Cys Ser Ala Ala Glu Asn
 20 25 30
 Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Asn
 35 40 45
 Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val
 50 55 60
 His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
 65 70 75 80
 Gln Glu Ile Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
 85 90 95
 Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
 100 105 110
 Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
 115 120 125
 Asn Cys Thr Asn Val Asn Val Thr Asn Thr Thr Asn Asn Thr Glu Glu
 130 135 140
 Lys Gly Glu Ile Lys Asn Cys Ser Phe Asn Ile Thr Thr Glu Ile Arg

145		150		155		160									
Asp	Lys	Lys	Gln	Lys	Val	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Val	Val
				165					170					175	
Pro	Ile	Asp	Asp	Asn	Asn	Asn	Asn	Ser	Ser	Asn	Tyr	Arg	Leu	Ile	Asn
			180					185					190		
Cys	Asn	Thr	Ser	Ala	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Glu
		195					200					205			
Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys
	210					215					220				
Cys	Asn	Asp	Lys	Lys	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser
225					230					235				240	
Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu
				245					250					255	
Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu
			260					265					270		
Asn	Ile	Thr	Asn	Asn	Ala	Lys	Thr	Ile	Ile	Val	Gln	Leu	Asn	Glu	Ser
		275					280					285			
Val	Glu	Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile
	290					295					300				
Arg	Ile	Gly	Pro	Gly	Gln	Ala	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly
305					310					315					320
Asp	Ile	Arg	Gln	Ala	His	Cys	Asn	Ile	Ser	Gly	Thr	Lys	Trp	Asn	Lys
				325					330					335	
Thr	Leu	Gln	Gln	Val	Ala	Lys	Lys	Leu	Arg	Glu	His	Phe	Asn	Asn	Lys
			340					345					350		
Thr	Ile	Ile	Phe	Lys	Pro	Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr
		355					360					365			
His	Ser	Phe	Asn	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Gly
	370					375					380				
Leu	Phe	Asn	Ser	Thr	Trp	Ile	Gly	Asn	Gly	Thr	Lys	Asn	Asn	Asn	Asn
385					390					395					400
Thr	Asn	Asp	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn
				405					410					415	
Met	Trp	Gln	Gly	Val	Gly	Gln	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Glu	Gly
			420					425					430		
Lys	Ile	Thr	Cys	Lys	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp
		435					440					445			
Gly	Gly	Asn	Asn	Asn	Thr	Asn	Glu	Thr	Glu	Ile	Phe	Arg	Pro	Gly	Gly

450					455					460					
Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val
465					470					475					480
Val	Lys	Ile	Glu	Pro	Leu	Gly	Val	Ala	Pro	Thr	Lys	Ala	Lys	Arg	Arg
				485					490					495	
Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	Val	Phe	Leu
			500					505					510		
Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Ile	Thr
		515					520					525			
Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln
	530					535					540				
Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu	Leu	Gln	Leu
545					550					555					560
Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala	Val	Glu
			565						570					575	
Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly
			580					585					590		
Lys	Leu	Ile	Cys	Thr	Thr	Thr	Val	Pro	Trp	Asn	Ser	Ser	Trp	Ser	Asn
	595						600					605			
Lys	Ser	Gln	Asp	Glu	Ile	Trp	Asp	Asn	Met	Thr	Trp	Met	Glu	Trp	Glu
	610					615					620				
Arg	Glu	Ile	Asn	Asn	Tyr	Thr	Asp	Ile	Ile	Tyr	Ser	Leu	Ile	Glu	Glu
625					630					635					640
Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu	Gln	Glu	Leu	Leu	Ala	Leu	Asp
			645						650					655	
Lys	Trp	Ala	Ser	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Asn	Trp	Leu	Trp
			660					665					670		
Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile	Gly	Leu	Arg
		675				680						685			
Ile	Val	Phe	Ala	Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg	Gln	Gly	Tyr
	690					695					700				
Ser	Pro	Leu	Ser	Phe	Gln	Thr	Leu	Ile	Pro	Asn	Pro	Arg	Gly	Pro	Asp
705					710					715					720
Arg	Pro	Glu	Gly	Ile	Glu	Glu	Glu	Gly	Gly	Glu	Gln	Asp	Arg	Asp	Arg
			725						730					735	
Ser	Ile	Arg	Leu	Val	Asn	Gly	Phe	Leu	Ala	Leu	Ala	Trp	Asp	Asp	Leu
			740					745					750		
Arg	Ser	Leu	Cys	Leu	Phe	Ser	Tyr	His	Arg	Leu	Arg	Asp	Phe	Ile	Leu

755

760

765

Ile Ala Ala Arg Thr Val Glu Leu Leu Gly Arg Lys Gly Leu Arg Arg
 770 775 780

Gly Trp Glu Ala Leu Lys Tyr Leu Trp Asn Leu Leu Gln Tyr Trp Gly
 785 790 795 800

Gln Glu Leu Lys Asn Ser Ala Ile Ser Leu Leu Asp Thr Thr Ala Ile
 805 810 815

Ala Val Ala Glu Gly Thr Asp Arg Val Ile Glu Val Val Gln Arg Ala
 820 825 830

Cys Arg Ala Ile Leu Asn Ile Pro Arg Arg Ile Arg Gln Gly Leu Glu
 835 840 845

Arg Ala Leu Leu
 850

<210> 14

<211> 2568

<212> DNA

<213> Human immunodeficiency virus

<400> 14

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tactacggcg tgcccggtgtg gaaggaggcc aacaccaccc tgttctgctg ctccgacgcc 180
aaggcctacg acaccgaggt gcacaacgtg tgggccaccc acgcctgctg gccaccgcac 240
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tgctgtaagc tgacccccct gtgctgagcc ctgaactgca ccaacgtgaa cgtgaccaac 420
accaccaaca acaccgagga gaagggcgag atcaagaact gctccttcaa catcaccacc 480
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<210> 15

<211> 857

<212> PRT

<213> Human immunodeficiency virus

<400> 15

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Gly Thr Met Ile Leu Gly Met Ile Ile Ile Cys Ser Ala Ala Glu Asn
      20             25             30

```

```

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Asp Ala Glu
      35             40             45

```

```

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val
      50             55             60

```

```

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
      65             70             75             80

```

```

Gln Glu Ile Asn Leu Glu Asn Val Thr Glu Glu Phe Asn Met Trp Lys
      85             90             95

```

```

Asn Asn Met Val Glu Gln Met His Thr Asp Ile Ile Ser Leu Trp Asp
     100             105             110

```

```

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
     115             120             125

```

```

Asn Cys Ser Asn Val Asn Val Thr Thr Asn Ile Thr Asn Ile Thr Asp
     130             135             140

```

```

Asn Met Lys Gly Glu Ile Lys Asn Cys Ser Phe Asn Met Thr Thr Glu
     145             150             155             160

```

```

Leu Arg Asp Lys Lys Gln Lys Val Tyr Ser Leu Phe Tyr Lys Leu Asp
     165             170             175

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```

Val Val Gln Ile Asn Lys Ser Asn Ser Ser Ser Gln Tyr Arg Leu Ile
     180             185             190

```

Asn	Cys	Asn	Thr	Ser	Ala	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	195	200	205
Glu	Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	210	215	220
Lys	Cys	Lys	Asp	Lys	Glu	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	225	230	235
Ser	Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	245	250	255
Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Val	Met	Ile	Arg	Ser	260	265	270
Glu	Asn	Ile	Thr	Asn	Asn	Ala	Lys	Asn	Ile	Ile	Val	Gln	Leu	Thr	Lys	275	280	285
Pro	Val	Lys	Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	290	295	300
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Thr	Arg	Asp	Gly	Gly	Asp	Asn	Asn	Ser	Lys	Asn	Glu	Thr	Phe	Arg	Pro	450	455	460
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Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	Val	Ala	Pro	Thr	Lys	Ala	Lys	485	490	495

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Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu	Leu		
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Lys	Gly	Leu	Arg	Leu	Gly	Trp	Glu	Gly	Leu	Lys	Tyr	Leu	Trp	Asn	Leu		
785					790					795					800		

Leu Leu Tyr Trp Gly Arg Glu Leu Lys Ile Ser Ala Ile Asn Leu Leu
805 810 815

Asp Thr Ile Ala Ile Ala Val Ala Gly Trp Thr Asp Arg Val Ile Glu
820 825 830

Ile Gly Gln Arg Ile Cys Arg Ala Ile Leu Asn Ile Pro Arg Arg Ile
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Arg Gln Gly Leu Glu Arg Ala Leu Leu
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<210> 16

<211> 2583

<212> DNA

<213> Human immunodeficiency virus

<400> 16

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<210> 17

<211> 1503

<212> DNA

<213> Human immunodeficiency virus

<400> 17

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<210> 18

<211> 2856

<212> DNA

<213> Human immunodeficiency virus

<400> 18

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<210> 19

<211> 633

<212> DNA

<213> Human immunodeficiency virus

<400> 19

gccgcgcca	tgggcggcaa	gtggtccaag	tctccatcg	tgggtggcc	cgcgtgcgc	60
gagcgcaccc	gccgcaccca	ccccgcgcgc	gagggcgctg	gcgcctgtc	ccaggacctg	120
gacaagcacg	gcgccatcac	ctcctccaac	accgcgcgca	acaaccccca	ctgcgcctgg	180
ctggaggccc	aggaggagga	ggaggaggtg	ggcttccccg	tgcgccccca	ggtgcccctg	240
cgccccatga	cctacaaggc	cgccctggac	ctgtcccact	tcctgaagga	gaagggcggc	300
ctggagggcc	tgatctactc	caagaagcgc	caggagatcc	tggacctgtg	ggtgtaccac	360
acccagggct	acttccccga	ctggcagaac	tacacccccg	gccccggcat	ccgctacccc	420
ctgaccttcg	gctggtgctt	caagctggtg	cccgtggacc	ccgaggaggt	ggaggaggcc	480
aacgagggcg	agaacaactc	cctgctgcac	cccatgtgcc	agcacggcat	ggaggacgag	540
gagcgcgagg	tgtgtatgtg	gaagttcgac	tccgcgctgg	ccctgcgcca	catcgccccg	600

gagctgcacc ccgagtacta caaggactgc taa

633

<210> 20

<211> 2856

<212> DNA

<213> Human immunodeficiency virus

<400> 20

gccgcgcgcca	tgccccagat	caccctgtgg	cagcgccecc	tggtgtccat	caaggtgggc	60
ggccagatca	aggaggccct	gctggccacc	ggcgcgcgacg	acaccgtgct	ggaggagatc	120
aacctgccccg	gcaagtggaa	gccaagatg	atcggcggca	tcggcggctt	catcaaggtg	180
cgccagtacg	accagatcct	gatcgagatc	tgccgcaaga	aggccatcgg	caccgtgctg	240
gtgggccccca	cccccgtaga	catcatcggc	cgcaacatgc	tgaccagct	gggctgcacc	300
ctgaacttcc	ccatctcccc	catcgagacc	gtgcccgtga	agctgaagcc	cggcatggac	360
ggccccaaagg	tgaagcagtg	gcccctgacc	gaggagaaga	tcaaggccct	gaccgccatc	420
tgcgaggaga	tggagaagga	gggcaagatc	accaagatcg	gccccgagaa	cccctacaac	480
acccccgtgt	tcgccatcaa	gaagaaggac	tccaccaagt	ggcgcaagct	ggtggacttc	540
cgcgagctga	acaagcgcac	ccaggacttc	tgggaggtgc	agctgggcat	ccccacccc	600
gccggcctga	agaagaagaa	gtccgtgacc	gtgctggacg	tgggcgacgc	ctacttctcc	660
gtgcccctgg	acgagggctt	ccgcaagtac	accgccttca	ccatcccctc	catcaacaac	720
gagacccccg	gcatccgcta	ccagtacaac	gtgctgcccc	agggctggaa	gggctcccc	780
gccatcttcc	agtcctccat	gaccaagatc	ctggagccct	tccgcgccc	gaaccccgag	840
atcgtgatct	accagtacat	ggacgacctg	tacgtgggt	ccgacctgga	gatcgccag	900
caccgcgcca	agatcgagga	gctgcgcgag	cacctgctga	agtggggctt	caccacccc	960
gacaagaagc	accagaagga	gcccccttc	ctgtggatgg	gctacgagct	gcaccccgac	1020
aagtggaccg	tgcagcccct	ccagctgccc	gagaaggact	cctggaccgt	gaacgacatc	1080
cagaagctgg	tgggcaagct	gaactgggccc	tcccagatct	accccgcat	caaggtgcgc	1140
cagctgtgca	agctgctgcg	cggcgcgaag	gccctgaccg	acatcgtgcc	cctgaccgag	1200
gaggccgagc	tggagctggc	cgagaaccgc	gagatcctga	aggagcccg	gcacggcggtg	1260
tactacgacc	cctccaagga	cctgatcgcc	gagatccaga	agcagggcca	cgaccagtgg	1320
acctaccaga	tctaccagga	gcccttcaag	aacctcaaga	ccggcaagta	cgccaagatg	1380
cgcaccgccc	acaccaacga	cgtgaagcag	ctgaccgagg	ccgtgcagaa	gatcgccatg	1440
gagtcctatc	tgatctgggg	caagaccccc	aagtctccgc	tgcccatcca	gaaggagacc	1500
tgggagacct	ggtggaccga	ctactggcag	gccacctgga	ttcccgagt	ggagttcgtg	1560
aacaccccc	ccctggtgaa	gctgtggtac	cagctggaga	aggagcccat	cgccggcgcc	1620
gagaccttct	acgtggacgg	cgccgccaac	cgcgagacca	agatcggcaa	ggccggctac	1680
gtgaccgacc	gcggccgcca	gaagatcgtg	tccctgaccg	agaccaccaa	ccagaaaacc	1740
gagctgcagg	ccatccagct	ggccctgcag	gactccggct	ccgaggtgaa	catcgtgacc	1800
gactcccagt	acgccttggg	catcatccag	gcccagccc	acaagtccga	gtccgagctg	1860
gtgaaccaga	tcatcgagca	gctgatcaag	aaggagcgcg	tgtacctgtc	ctgggtgccc	1920
gcccacaagg	gcatcggcgg	caacgagcag	gtggacaagc	tggtgtcctc	cggcatccgc	1980
aaggtgctgt	tcctggacgg	catcgacaag	gcccaggagg	agcacgagaa	gtaccactcc	2040
aactggcgcg	ccatggcctc	cgagttcaac	ctgcccccca	tcgtggccaa	ggagatcgtg	2100
gcctcctgcg	acaagtgcca	gctgaagggc	gaggccatgc	acggccaggt	ggactgctcc	2160
cccggcatct	ggcagctgga	ctgcaccac	ctggagggca	agatcatcct	ggtggccgtg	2220
cacgtggcct	ccggctacat	cgaggccgag	gtgatccccg	ccgagaccgg	ccaggagacc	2280
gcctacttca	tcctgaagct	ggccggccgc	tggcccgtga	aggtgatcca	caccgacaac	2340
ggctccaact	tcacctccgc	cgccgtgaag	gccgcctgct	ggtgggccc	catccagcag	2400
gagttcggca	tcccctacaa	ccccagtc	cagggcgtgg	tggagtccat	gaacaaggag	2460
ctgaagaaga	tcatcggcca	ggtgcgcgac	caggccgagc	acctcaagac	cgccgtgcag	2520
atggccgtgt	tcatccacaa	cttcaagcgc	aaggcgggca	tcggcggtta	ctccgcccgc	2580
gagcgcacat	tcgacatcat	cgccaccgac	atccagacca	aggagctgca	gaagcagatc	2640
atcaagatcc	agaacttccg	cgtgtactac	cgcgactccc	gcgaccccat	ctggaagggc	2700
cccgccaaagc	tgctgtggaa	gggcgagggc	gccgtggtga	tccaggacaa	ctccgacatc	2760
aaggtggtgc	cccgcgcaa	ggccaagatc	atcaaggact	acggcaagca	gatggccggc	2820
gccgactgcg	tggccggccc	ccaggacgag	gactaa			2856

<210> 21
<211> 497
<212> PRT
<213> Human immunodeficiency virus

<400> 21

Met	Gly	Ala	Arg	Ala	Ser	Val	Leu	Ser	Gly	Gly	Lys	Leu	Asp	Ala	Trp
1				5					10					15	
Glu	Lys	Ile	Arg	Leu	Arg	Pro	Gly	Gly	Lys	Lys	Lys	Tyr	Arg	Leu	Lys
			20					25					30		
His	Leu	Val	Trp	Ala	Ser	Arg	Glu	Leu	Glu	Arg	Phe	Ala	Leu	Asn	Pro
			35					40				45			
Gly	Leu	Leu	Glu	Thr	Ser	Glu	Gly	Cys	Lys	Gln	Ile	Ile	Gly	Gln	Leu
	50						55				60				
Gln	Pro	Ala	Leu	Gln	Thr	Gly	Ser	Glu	Glu	Leu	Arg	Ser	Leu	Tyr	Asn
	65				70					75					80
Thr	Val	Ala	Thr	Leu	Tyr	Cys	Val	His	Gln	Arg	Ile	Glu	Val	Lys	Asp
				85					90					95	
Thr	Lys	Glu	Ala	Leu	Glu	Lys	Ile	Glu	Glu	Glu	Gln	Asn	Lys	Ser	Gln
			100					105					110		
Gln	Lys	Thr	Gln	Gln	Ala	Ala	Ala	Asp	Lys	Gly	Asn	Ser	Ser	Lys	Val
		115					120					125			
Ser	Gln	Asn	Tyr	Pro	Ile	Val	Gln	Asn	Leu	Gln	Gly	Gln	Met	Val	His
	130					135					140				
Gln	Ala	Ile	Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys	Val	Ile	Glu
	145				150					155					160
Glu	Lys	Ala	Phe	Ser	Pro	Glu	Val	Ile	Pro	Met	Phe	Ser	Ala	Leu	Ser
				165					170					175	
Glu	Gly	Ala	Thr	Pro	Gln	Asp	Leu	Asn	Thr	Met	Leu	Asn	Thr	Val	Gly
			180					185					190		
Gly	His	Gln	Ala	Ala	Met	Gln	Met	Leu	Lys	Asp	Thr	Ile	Asn	Glu	Glu
		195					200					205			
Ala	Ala	Glu	Trp	Asp	Arg	Leu	His	Pro	Val	His	Ala	Gly	Pro	Ile	Pro
	210					215					220				
Pro	Gly	Gln	Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr
	225				230					235					240
Ser	Thr	Leu	Gln	Glu	Gln	Ile	Ala	Trp	Met	Thr	Ser	Asn	Pro	Pro	Ile
			245					250					255		
Pro	Val	Gly	Glu	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys

260						265						270					
Ile	Val	Arg	Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly		
		275								280				285			
Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Thr	Leu		
	290					295					300						
Arg	Ala	Glu	Gln	Ala	Thr	Gln	Asp	Val	Lys	Asn	Trp	Met	Thr	Asp	Thr		
305					310					315					320		
Leu	Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Lys	Ala		
				325					330					335			
Leu	Gly	Pro	Gly	Ala	Thr	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly		
			340					345					350				
Val	Gly	Gly	Pro	Gly	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser		
		355					360					365					
Gln	Val	Thr	Asn	Ala	Ala	Ile	Met	Met	Gln	Arg	Gly	Asn	Phe	Lys	Gly		
	370					375					380						
Gln	Arg	Arg	Ile	Ile	Lys	Cys	Phe	Asn	Cys	Gly	Lys	Glu	Gly	His	Ile		
385					390					395					400		
Ala	Arg	Asn	Cys	Arg	Ala	Pro	Arg	Lys	Lys	Gly	Cys	Trp	Lys	Cys	Gly		
			405						410					415			
Lys	Glu	Gly	His	Gln	Met	Lys	Asp	Cys	Thr	Glu	Arg	Gln	Ala	Asn	Phe		
			420					425					430				
Leu	Gly	Lys	Ile	Trp	Pro	Ser	Asn	Lys	Gly	Arg	Pro	Gly	Asn	Phe	Leu		
		435					440					445					
Gln	Ser	Arg	Pro	Glu	Pro	Thr	Ala	Pro	Pro	Ala	Glu	Ser	Phe	Gly	Phe		
	450					455					460						
Gly	Glu	Glu	Ile	Thr	Pro	Ser	Pro	Lys	Gln	Glu	Pro	Lys	Asp	Lys	Glu		
465					470					475					480		
Pro	Pro	Leu	Thr	Ser	Leu	Lys	Ser	Leu	Phe	Gly	Asn	Asp	Pro	Leu	Ser		
				485					490					495			

Gln

<210> 22

<211> 948

<212> PRT

<213> Human immunodeficiency virus

<400> 22

Met	Pro	Gln	Ile	Thr	Leu	Trp	Gln	Arg	Pro	Leu	Val	Thr	Ile	Lys	Ile
1					5				10					15	

Gly	Gly	Gln	Leu	Lys	Glu	Ala	Leu	Leu	Ala	Thr	Gly	Ala	Asp	Asp	Thr	20	25	30
Val	Leu	Glu	Glu	Ile	Asn	Leu	Pro	Gly	Lys	Trp	Lys	Pro	Lys	Met	Ile	35	40	45
Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys	Val	Arg	Gln	Tyr	Asp	Gln	Ile	Leu	50	55	60
Ile	Glu	Ile	Cys	Gly	Lys	Lys	Ala	Ile	Gly	Thr	Val	Leu	Val	Gly	Pro	65	70	75
Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn	Met	Leu	Thr	Gln	Ile	Gly	Cys	85	90	95
Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile	Glu	Thr	Val	Pro	Val	Lys	Leu	100	105	110
Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val	Lys	Gln	Trp	Pro	Leu	Thr	Glu	115	120	125
Glu	Lys	Ile	Lys	Ala	Leu	Thr	Glu	Ile	Cys	Thr	Glu	Met	Glu	Lys	Glu	130	135	140
Gly	Lys	Ile	Ser	Lys	Ile	Gly	Pro	Glu	Asn	Pro	Tyr	Asn	Thr	Pro	Ile	145	150	155
Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	Lys	Trp	Arg	Lys	Leu	Val	Asp	165	170	175
Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	Asp	Phe	Trp	Glu	Val	Gln	Leu	180	185	190
Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	Lys	Lys	Lys	Ser	Val	Thr	Val	195	200	205
Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	Val	Pro	Leu	Asp	Glu	Asp	Phe	210	215	220
Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser	Ile	Asn	Asn	Glu	Thr	Pro	225	230	235
Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	Pro	Gln	Gly	Trp	Lys	Gly	Ser	245	250	255
Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	Lys	Ile	Leu	Glu	Pro	Phe	Arg	260	265	270
Thr	Gln	Asn	Pro	Glu	Ile	Val	Ile	Tyr	Gln	Tyr	Met	Asp	Asp	Leu	Tyr	275	280	285
Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	His	Arg	Ala	Lys	Ile	Glu	Glu	290	295	300
Leu	Arg	Glu	His	Leu	Leu	Arg	Trp	Gly	Phe	Thr	Thr	Pro	Asp	Lys	Lys	305	310	315

His Gln Lys Glu Pro Pro Phe Leu Trp Met Gly Tyr Glu Leu His Pro
 325 330 335

Asp Lys Trp Thr Val Gln Pro Ile Gln Leu Pro Glu Lys Asp Ser Trp
 340 345 350

Thr Val Asn Asp Ile Gln Lys Leu Val Gly Lys Leu Asn Trp Ala Ser
 355 360 365

Gln Ile Tyr Pro Gly Ile Lys Val Lys Gln Leu Cys Lys Leu Leu Arg
 370 375 380

Gly Ala Lys Ala Leu Thr Asp Ile Val Pro Leu Thr Glu Glu Ala Glu
 385 390 395 400

Leu Glu Leu Ala Glu Asn Arg Glu Ile Leu Lys Glu Pro Val His Gly
 405 410 415

Val Tyr Tyr Asp Pro Ser Lys Asp Leu Ile Ala Glu Ile Gln Lys Gln
 420 425 430

Gly Gln Asp Gln Trp Thr Tyr Gln Ile Tyr Gln Glu Pro Phe Lys Asn
 435 440 445

Leu Lys Thr Gly Lys Tyr Ala Lys Met Arg Ser Ala His Thr Asn Asp
 450 455 460

Val Lys Gln Leu Thr Glu Ala Val Gln Lys Ile Ala Thr Glu Ser Ile
 465 470 475 480

Val Ile Trp Gly Lys Thr Pro Lys Phe Arg Leu Pro Ile Gln Lys Glu
 485 490 495

Thr Trp Glu Thr Trp Trp Thr Glu Tyr Trp Gln Ala Thr Trp Ile Pro
 500 505 510

Glu Trp Glu Phe Val Asn Thr Pro Pro Leu Val Lys Leu Trp Tyr Gln
 515 520 525

Leu Glu Lys Glu Pro Ile Ala Gly Ala Glu Thr Phe Tyr Val Asp Gly
 530 535 540

Ala Ala Asn Arg Glu Thr Lys Leu Gly Lys Ala Gly Tyr Val Thr Asp
 545 550 555 560

Arg Gly Arg Gln Lys Val Val Ser Leu Thr Glu Thr Thr Asn Gln Lys
 565 570 575

Thr Glu Leu Gln Ala Ile His Leu Ala Leu Gln Asp Ser Gly Ser Glu
 580 585 590

Val Asn Ile Val Thr Asp Ser Gln Tyr Ala Leu Gly Ile Ile Gln Ala
 595 600 605

Gln Pro Asp Lys Ser Glu Ser Glu Leu Val Asn Gln Ile Ile Glu Gln
 610 615 620

Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu	Ser	Trp	Val	Pro	Ala	His	Lys	
625					630					635					640	
Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	Lys	Leu	Val	Ser	Thr	Gly	Ile	
				645					650					655		
Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	Asp	Lys	Ala	Gln	Glu	Glu	His	
			660					665					670			
Glu	Lys	Tyr	His	Ser	Asn	Trp	Arg	Ala	Met	Ala	Ser	Asp	Phe	Asn	Leu	
		675					680					685				
Pro	Pro	Ile	Val	Ala	Lys	Glu	Ile	Val	Ala	Ser	Cys	Asp	Lys	Cys	Gln	
	690					695					700					
Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	Val	Asp	Cys	Ser	Pro	Gly	Ile	
705					710					715					720	
Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	Gly	Lys	Ile	Ile	Leu	Val	Ala	
			725						730					735		
Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	Ala	Glu	Val	Ile	Pro	Ala	Glu	
			740					745					750			
Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Ile	Leu	Lys	Leu	Ala	Gly	Arg	Trp	
	755						760					765				
Pro	Val	Lys	Val	Ile	His	Thr	Asp	Asn	Gly	Ser	Asn	Phe	Thr	Ser	Ala	
	770					775					780					
Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala	Gly	Ile	Gln	Gln	Glu	Phe	Gly	
785					790					795					800	
Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly	Val	Val	Glu	Ser	Met	Asn	Lys	
			805						810					815		
Glu	Leu	Lys	Lys	Ile	Ile	Gly	Gln	Val	Arg	Asp	Gln	Ala	Glu	His	Leu	
			820					825					830			
Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe	Ile	His	Asn	Phe	Lys	Arg	Lys	
		835					840					845				
Gly	Gly	Ile	Gly	Gly	Tyr	Ser	Ala	Gly	Glu	Arg	Ile	Ile	Asp	Ile	Ile	
	850					855					860					
Ala	Thr	Asp	Ile	Gln	Thr	Lys	Glu	Leu	Gln	Lys	Gln	Ile	Thr	Lys	Ile	
865					870					875					880	
Gln	Asn	Phe	Arg	Val	Tyr	Tyr	Arg	Asp	Ser	Arg	Asp	Pro	Ile	Trp	Lys	
			885						890					895		
Gly	Pro	Ala	Lys	Leu	Leu	Trp	Lys	Gly	Glu	Gly	Ala	Val	Val	Ile	Gln	
			900					905					910			
Asp	Asn	Ser	Asp	Ile	Lys	Val	Val	Pro	Arg	Arg	Lys	Ala	Lys	Ile	Ile	
		915					920					925				

Arg Asp Tyr Gly Lys Gln Met Ala Gly Asp Asp Cys Val Ala Gly Arg
930 935 940

Gln Asp Glu Asp
945

<210> 23

<211> 207

<212> PRT

<213> Human immunodeficiency virus

<400> 23

Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Ala Val
1 5 10 15

Arg Glu Arg Ile Arg Arg Thr His Pro Ala Ala Glu Gly Val Gly Ala
20 25 30

Val Ser Gln Asp Leu Asp Lys His Gly Ala Ile Thr Ser Ser Asn Thr
35 40 45

Ala Ala Asn Asn Pro Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu
50 55 60

Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
65 70 75 80

Thr Tyr Lys Ala Ala Leu Asp Leu Ser His Phe Leu Lys Glu Lys Gly
85 90 95

Gly Leu Glu Gly Leu Ile Tyr Ser Lys Lys Arg Gln Glu Ile Leu Asp
100 105 110

Leu Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr
115 120 125

Thr Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe
130 135 140

Lys Leu Val Pro Val Asp Pro Glu Glu Val Glu Glu Ala Asn Glu Gly
145 150 155 160

Glu Asn Asn Ser Leu Leu His Pro Met Cys Gln His Gly Met Glu Asp
165 170 175

Glu Glu Arg Glu Val Leu Met Trp Lys Phe Asp Ser Arg Leu Ala Leu
180 185 190

Arg His Ile Ala Arg Glu Leu His Pro Glu Tyr Tyr Lys Asp Cys
195 200 205

<210> 24

<211> 948

<212> PRT

<213> Human immunodeficiency virus

<400> 24

Met	Pro	Gln	Ile	Thr	Leu	Trp	Gln	Arg	Pro	Leu	Val	Ser	Ile	Lys	Val
1				5					10					15	
Gly	Gly	Gln	Ile	Lys	Glu	Ala	Leu	Leu	Ala	Thr	Gly	Ala	Asp	Asp	Thr
			20					25					30		
Val	Leu	Glu	Glu	Ile	Asn	Leu	Pro	Gly	Lys	Trp	Lys	Pro	Lys	Met	Ile
		35					40					45			
Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys	Val	Arg	Gln	Tyr	Asp	Gln	Ile	Leu
	50					55					60				
Ile	Glu	Ile	Cys	Gly	Lys	Lys	Ala	Ile	Gly	Thr	Val	Leu	Val	Gly	Pro
65					70					75					80
Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn	Met	Leu	Thr	Gln	Leu	Gly	Cys
				85					90					95	
Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile	Glu	Thr	Val	Pro	Val	Lys	Leu
			100					105					110		
Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val	Lys	Gln	Trp	Pro	Leu	Thr	Glu
		115					120					125			
Glu	Lys	Ile	Lys	Ala	Leu	Thr	Ala	Ile	Cys	Glu	Glu	Met	Glu	Lys	Glu
	130						135					140			
Gly	Lys	Ile	Thr	Lys	Ile	Gly	Pro	Glu	Asn	Pro	Tyr	Asn	Thr	Pro	Val
145					150					155					160
Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	Lys	Trp	Arg	Lys	Leu	Val	Asp
				165					170					175	
Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	Asp	Phe	Trp	Glu	Val	Gln	Leu
			180					185					190		
Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	Lys	Lys	Lys	Ser	Val	Thr	Val
		195					200					205			
Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	Val	Pro	Leu	Asp	Glu	Gly	Phe
	210					215					220				
Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser	Ile	Asn	Asn	Glu	Thr	Pro
225					230					235					240
Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	Pro	Gln	Gly	Trp	Lys	Gly	Ser
				245					250					255	
Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	Lys	Ile	Leu	Glu	Pro	Phe	Arg
			260					265					270		
Ala	Gln	Asn	Pro	Glu	Ile	Val	Ile	Tyr	Gln	Tyr	Met	Asp	Asp	Leu	Tyr
		275					280					285			
Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	His	Arg	Ala	Lys	Ile	Glu	Glu

290					295					300					
Leu	Arg	Glu	His	Leu	Leu	Lys	Trp	Gly	Phe	Thr	Thr	Pro	Asp	Lys	Lys
305					310					315					320
His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	Met	Gly	Tyr	Glu	Leu	His	Pro
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Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Gln	Leu	Pro	Glu	Lys	Asp	Ser	Trp
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Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Arg	Gln	Leu	Cys	Lys	Leu	Leu	Arg
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				405					410					415	
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Val	Lys	Gln	Leu	Thr	Glu	Ala	Val	Gln	Lys	Ile	Ala	Met	Glu	Ser	Ile
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Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	Arg	Leu	Pro	Ile	Gln	Lys	Glu
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Thr	Trp	Glu	Thr	Trp	Trp	Thr	Asp	Tyr	Trp	Gln	Ala	Thr	Trp	Ile	Pro
			500					505					510		
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545						550					555				560
Arg	Gly	Arg	Gln	Lys	Ile	Val	Ser	Leu	Thr	Glu	Thr	Thr	Asn	Gln	Lys
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		675					680					685			
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Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	Val	Asp	Cys	Ser	Pro	Gly	Ile
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Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	Gly	Lys	Ile	Ile	Leu	Val	Ala
			725						730					735	
Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	Ala	Glu	Val	Ile	Pro	Ala	Glu
			740					745					750		
Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Ile	Leu	Lys	Leu	Ala	Gly	Arg	Trp
		755					760					765			
Pro	Val	Lys	Val	Ile	His	Thr	Asp	Asn	Gly	Ser	Asn	Phe	Thr	Ser	Ala
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Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala	Gly	Ile	Gln	Gln	Glu	Phe	Gly
785				790					795						800
Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly	Val	Val	Glu	Ser	Met	Asn	Lys
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			820				825						830		
Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe	Ile	His	Asn	Phe	Lys	Arg	Lys
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Gly	Gly	Ile	Gly	Gly	Tyr	Ser	Ala	Gly	Glu	Arg	Ile	Ile	Asp	Ile	Ile
	850					855					860				
Ala	Thr	Asp	Ile	Gln	Thr	Lys	Glu	Leu	Gln	Lys	Gln	Ile	Ile	Lys	Ile
865				870					875						880
Gln	Asn	Phe	Arg	Val	Tyr	Tyr	Arg	Asp	Ser	Arg	Asp	Pro	Ile	Trp	Lys
			885					890					895		
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900

905

910

Asp Asn Ser Asp Ile Lys Val Val Pro Arg Arg Lys Ala Lys Ile Ile
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Gln Asp Glu Asp
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<210> 25

<211> 1512

<212> DNA

<213> Human immunodeficiency virus

<400> 25

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<210> 26

<211> 2562

<212> DNA

<213> Human immunodeficiency virus

<400> 26

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aaggcctacg acaccgaggt gcacaacgtg tgggccaccc acgcctgcgt gcccaccgac 240
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<210> 27

<400> 27

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<210> 28

<211> 500

<212> PRT

<213> Human immunodeficiency virus

<400> 28

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Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys
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His	Ile	Val	Trp	Ala	Ser	Arg	Glu	Leu	Glu	Arg	Phe	Ala	Val	Asn	Pro	35	40	45
Gly	Leu	Leu	Glu	Thr	Ser	Glu	Gly	Cys	Arg	Gln	Ile	Leu	Gly	Gln	Leu	50	55	60
Gln	Pro	Ser	Leu	Gln	Thr	Gly	Ser	Glu	Glu	Leu	Arg	Ser	Leu	Tyr	Asn	65	70	75
Thr	Val	Ala	Thr	Leu	Tyr	Cys	Val	His	Gln	Arg	Ile	Glu	Val	Lys	Asp	85	90	95
Thr	Lys	Glu	Ala	Leu	Glu	Lys	Ile	Glu	Glu	Glu	Gln	Asn	Lys	Ser	Lys	100	105	110
Lys	Lys	Ala	Gln	Gln	Ala	Ala	Ala	Asp	Thr	Gly	Asn	Ser	Ser	Gln	Val	115	120	125
Ser	Gln	Asn	Tyr	Pro	Ile	Val	Gln	Asn	Leu	Gln	Gly	Gln	Met	Val	His	130	135	140
Gln	Ala	Ile	Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys	Val	Val	Glu	145	150	155
Glu	Lys	Ala	Phe	Ser	Pro	Glu	Val	Ile	Pro	Met	Phe	Ser	Ala	Leu	Ser	165	170	175
Glu	Gly	Ala	Thr	Pro	Gln	Asp	Leu	Asn	Thr	Met	Leu	Asn	Thr	Val	Gly	180	185	190
Gly	His	Gln	Ala	Ala	Met	Gln	Met	Leu	Lys	Glu	Thr	Ile	Asn	Glu	Glu	195	200	205
Ala	Ala	Glu	Trp	Asp	Arg	Leu	His	Pro	Val	His	Ala	Gly	Pro	Ile	Ala	210	215	220
Pro	Gly	Gln	Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr	225	230	235
Ser	Thr	Leu	Gln	Glu	Gln	Ile	Gly	Trp	Met	Thr	Asn	Asn	Pro	Pro	Ile	245	250	255
Pro	Val	Gly	Glu	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	260	265	270
Ile	Val	Arg	Met	Tyr	Ser	Pro	Thr	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly	275	280	285
Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Tyr	Lys	Thr	Leu	290	295	300
Arg	Ala	Glu	Gln	Ala	Ser	Gln	Glu	Val	Lys	Asn	Trp	Met	Thr	Glu	Thr	305	310	315
Leu	Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Lys	Ala	325	330	335

Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
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 Val Gly Gly Pro Gly His Lys Ala Arg Val Leu Ala Glu Ala Met Ser
 355 360 365
 Gln Val Thr Asn Ser Ala Thr Ile Met Met Gln Arg Gly Asn Phe Arg
 370 375 380
 Asn Gln Arg Lys Thr Val Lys Cys Phe Asn Cys Gly Lys Glu Gly His
 385 390 395 400
 Ile Ala Lys Asn Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys
 405 410 415
 Gly Lys Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn
 420 425 430
 Phe Leu Gly Lys Ile Trp Pro Ser His Lys Gly Arg Pro Gly Asn Phe
 435 440 445
 Leu Gln Ser Arg Pro Glu Pro Thr Ala Pro Pro Glu Glu Ser Phe Arg
 450 455 460
 Phe Gly Glu Glu Thr Thr Thr Pro Ser Gln Lys Gln Glu Pro Ile Asp
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 Pro Ser Ser Gln
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<210> 29
 <211> 850
 <212> PRT
 <213> Human immunodeficiency virus

<400> 29
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 Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val
 50 55 60
 His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
 65 70 75 80
 Gln Glu Val Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
 85 90 95

Asn	Asn	Met	Val	Glu	Gln	Met	His	Glu	Asp	Ile	Ile	Ser	Leu	Trp	Asp		
			100					105					110				
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu		
		115					120					125					
Asn	Cys	Thr	Asp	Leu	Lys	Asn	Asn	Leu	Leu	Asn	Thr	Asn	Ser	Ser	Ser		
	130					135					140						
Gly	Glu	Lys	Met	Glu	Lys	Gly	Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Ile		
145					150					155					160		
Thr	Thr	Ser	Ile	Arg	Asp	Lys	Val	Gln	Lys	Glu	Tyr	Ala	Leu	Phe	Tyr		
			165					170						175			
Lys	Leu	Asp	Val	Val	Pro	Ile	Asp	Asn	Asn	Asn	Asn	Thr	Ser	Tyr	Arg		
		180						185					190				
Leu	Ile	Ser	Cys	Asn	Thr	Ser	Val	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val		
	195						200					205					
Ser	Phe	Glu	Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala		
	210					215				220							
Ile	Leu	Lys	Cys	Asn	Asp	Lys	Lys	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Thr		
225				230					235					240			
Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Arg	Pro	Val	Val	Ser		
			245						250					255			
Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Val	Val	Ile		
		260						265					270				
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	275						280					285					
Asn	Glu	Ser	Val	Glu	Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg		
	290					295				300							
Lys	Ser	Ile	His	Ile	Gly	Pro	Gly	Arg	Ala	Phe	Tyr	Thr	Thr	Gly	Glu		
305				310					315					320			
Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	Cys	Asn	Ile	Ser	Arg	Ala	Lys		
			325					330						335			
Trp	Asn	Asn	Thr	Leu	Lys	Gln	Ile	Val	Lys	Lys	Leu	Arg	Glu	Gln	Phe		
		340						345					350				
Gly	Asn	Lys	Thr	Ile	Val	Phe	Asn	Gln	Ser	Ser	Gly	Gly	Asp	Pro	Glu		
	355					360					365						
Ile	Val	Met	His	Ser	Phe	Asn	Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn		
	370					375					380						
Thr	Thr	Gln	Leu	Phe	Asn	Ser	Thr	Trp	Asn	Asp	Asn	Gly	Thr	Trp	Asn		
385				390					395					400			

Asn	Thr	Lys	Asp	Lys	Asn	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	405	410	415
Ile	Ile	Asn	Met	Trp	Gln	Glu	Val	Gly	Lys	Ala	Met	Tyr	Ala	Pro	Pro	420	425	430
Ile	Arg	Gly	Gln	Ile	Arg	Cys	Ser	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	435	440	445
Thr	Arg	Asp	Gly	Gly	Asn	Asn	Asn	Asn	Asp	Thr	Glu	Ile	Phe	Arg	Pro	450	455	460
Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	465	470	475
Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	Val	Ala	Pro	Thr	Lys	Ala	Lys	485	490	495
Arg	Arg	Val	Val	Gln	Arg	Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	Met	500	505	510
Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	515	520	525
Met	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	530	535	540
Gln	Gln	Asn	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu	Leu	545	550	555
Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala	565	570	575
Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	580	585	590
Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Thr	Val	Pro	Trp	Asn	Ala	Ser	Trp	595	600	605
Ser	Asn	Lys	Ser	Leu	Asp	Glu	Ile	Trp	Asp	Asn	Met	Thr	Trp	Met	Glu	610	615	620
Trp	Glu	Arg	Glu	Ile	Asp	Asn	Tyr	Thr	Ser	Leu	Ile	Tyr	Thr	Leu	Ile	625	630	635
Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu	Gln	Glu	Leu	Leu	Glu	645	650	655
Leu	Asp	Lys	Trp	Ala	Ser	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Asn	Trp	660	665	670
Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile	Gly	675	680	685
Leu	Arg	Ile	Val	Phe	Ala	Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg	Gln	690	695	700

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 Pro Asp Arg Pro Glu Gly Ile Glu Glu Glu Gly Gly Glu Arg Asp Arg
 725 730 735
 Asp Arg Ser Gly Arg Leu Val Asp Gly Phe Leu Ala Leu Ile Trp Asp
 740 745 750
 Asp Leu Arg Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp Leu
 755 760 765
 Leu Leu Ile Val Thr Arg Ile Val Glu Leu Leu Gly Arg Arg Gly Trp
 770 775 780
 Glu Val Leu Lys Tyr Trp Trp Asn Leu Leu Gln Tyr Trp Ser Gln Glu
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 Ala Glu Gly Thr Asp Arg Val Ile Glu Val Val Gln Arg Ala Cys Arg
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 Leu Leu
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<210> 30
 <211> 610
 <212> PRT
 <213> Human immunodeficiency virus

<400> 30
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 Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Asn
 35 40 45
 Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val
 50 55 60
 His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
 65 70 75 80
 Gln Glu Ile Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
 85 90 95
 Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp

100						105						110					
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu		
		115						120					125				
Asn	Cys	Thr	Asn	Val	Asn	Val	Thr	Asn	Thr	Thr	Asn	Asn	Thr	Glu	Glu		
	130					135					140						
Lys	Gly	Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	Glu	Ile	Arg		
145					150					155					160		
Asp	Lys	Lys	Gln	Lys	Val	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Val	Val		
				165					170					175			
Pro	Ile	Asp	Asp	Asn	Asn	Asn	Asn	Ser	Ser	Asn	Tyr	Arg	Leu	Ile	Asn		
		180						185					190				
Cys	Asn	Thr	Ser	Ala	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Glu		
		195					200					205					
Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys		
	210					215					220						
Cys	Asn	Asp	Lys	Lys	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser		
225					230					235					240		
Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu		
			245						250					255			
Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu		
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Asn	Ile	Thr	Asn	Asn	Ala	Lys	Thr	Ile	Ile	Val	Gln	Leu	Asn	Glu	Ser		
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Val	Glu	Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile		
	290					295					300						
Arg	Ile	Gly	Pro	Gly	Gln	Ala	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly		
305					310					315					320		
Asp	Ile	Arg	Gln	Ala	His	Cys	Asn	Ile	Ser	Gly	Thr	Lys	Trp	Asn	Lys		
			325					330						335			
Thr	Leu	Gln	Gln	Val	Ala	Lys	Lys	Leu	Arg	Glu	His	Phe	Asn	Asn	Lys		
		340						345					350				
Thr	Ile	Ile	Phe	Lys	Pro	Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr		
	355						360					365					
His	Ser	Phe	Asn	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Gly		
	370					375					380						
Leu	Phe	Asn	Ser	Thr	Trp	Ile	Gly	Asn	Gly	Thr	Lys	Asn	Asn	Asn	Asn		
385					390					395					400		
Thr	Asn	Asp	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn		

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Met	Trp	Gln	Gly	Val	Gly	Gln	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Glu	Gly
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Lys	Ile	Thr	Cys	Lys	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp
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				500								510			
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515								520				525			
Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr
530								535				540			
Leu	Lys	Asp	Gln	Gln	Leu	Glu	Ile	Trp	Asp	Asn	Met	Thr	Trp	Met	Glu
545								550				555			
Trp	Glu	Arg	Glu	Ile	Asn	Asn	Tyr	Thr	Asp	Ile	Ile	Tyr	Ser	Leu	Ile
				565								570			
Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu	Gln	Glu	Leu	Leu	Ala
580								585				590			
Leu	Asp	Lys	Trp	Ala	Ser	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Asn	Trp
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610															

<210> 31

<211> 1837

<212> DNA

<213> Human immunodeficiency virus

<400> 31

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<210> 32

<211> 841

<212> PRT

<213> Human immunodeficiency virus

<400> 32

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Met Arg Val Lys Gly Ile Arg Lys Asn Tyr Gln His Leu Trp Arg Trp
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      20              25              30

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Thr
      35              40              45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val
      50              55              60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
      65              70              75              80

Gln Glu Val Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
      85              90              95

Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
      100             105             110

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
      115             120             125

Asn Cys Thr Asp Leu Met Asn Ala Thr Asn Thr Asn Thr Thr Ile Ile
      130             135             140

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Tyr	Arg	Trp	Arg	Gly	Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	145	150	155	160
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Asp	Val	Val	Pro	Ile	Asp	Asn	Asp	Asn	Thr	Ser	Tyr	Arg	Leu	Ile	Ser	180	185	190	
Cys	Asn	Thr	Ser	Val	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Glu	195	200	205	
Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	210	215	220	
Cys	Asn	Asp	Lys	Lys	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Thr	Asn	Val	Ser	225	230	235	240
Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Arg	Pro	Val	Val	Ser	Thr	Gln	Leu	245	250	255	
Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Val	Val	Ile	Arg	Ser	Glu	260	265	270	
Asn	Phe	Thr	Asp	Asn	Ala	Lys	Thr	Ile	Ile	Val	Gln	Leu	Asn	Glu	Ser	275	280	285	
Val	Glu	Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	290	295	300	
His	Ile	Gly	Pro	Gly	Arg	Ala	Phe	Tyr	Thr	Thr	Gly	Glu	Ile	Ile	Gly	305	310	315	320
Asp	Ile	Arg	Gln	Ala	His	Cys	Asn	Ile	Ser	Arg	Ala	Lys	Trp	Asn	Asn	325	330	335	
Thr	Leu	Lys	Gln	Ile	Val	Lys	Lys	Leu	Arg	Glu	Gln	Phe	Gly	Asn	Lys	340	345	350	
Thr	Ile	Val	Phe	Asn	Gln	Ser	Ser	Gly	Gly	Asp	Pro	Glu	Ile	Val	Met	355	360	365	
His	Ser	Phe	Asn	Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Thr	Gln	370	375	380	
Leu	Phe	Asn	Ser	Thr	Trp	Asn	Gly	Thr	Trp	Asn	Asn	Thr	Glu	Gly	Asn	385	390	395	400
Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Glu	405	410	415	
Val	Gly	Lys	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Arg	Gly	Gln	Ile	Arg	Cys	420	425	430	
Ser	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Asn	Asn	435	440	445	

Glu	Thr	Glu	Ile	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	450	455	460	
Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	465	470	475	480
Val	Ala	Pro	Thr	Lys	Ala	Lys	Arg	Arg	Val	Val	Gln	Arg	Glu	Lys	Arg	485	490	495	
Ala	Val	Gly	Ile	Gly	Ala	Met	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	500	505	510	
Ser	Thr	Met	Gly	Ala	Ala	Ser	Met	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	515	520	525	
Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Asn	Asn	Leu	Leu	Arg	Ala	Ile	530	535	540	
Glu	Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	545	550	555	560
Leu	Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	565	570	575	
Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Ala	580	585	590	
Val	Pro	Trp	Asn	Ala	Ser	Trp	Ser	Asn	Lys	Ser	Leu	Asp	Glu	Ile	Trp	595	600	605	
Asp	Asn	Met	Thr	Trp	Met	Glu	Trp	Glu	Arg	Glu	Ile	Asp	Asn	Tyr	Thr	610	615	620	
Ser	Leu	Ile	Tyr	Thr	Leu	Ile	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	625	630	635	640
Asn	Glu	Gln	Glu	Leu	Leu	Glu	Leu	Asp	Lys	Trp	Ala	Ser	Leu	Trp	Asn	645	650	655	
Trp	Phe	Asp	Ile	Thr	Asn	Trp	Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	660	665	670	
Ile	Val	Gly	Gly	Leu	Val	Gly	Leu	Arg	Ile	Val	Phe	Ala	Val	Leu	Ser	675	680	685	
Ile	Val	Asn	Arg	Val	Arg	Gln	Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Thr	690	695	700	
Arg	Leu	Pro	Ala	Pro	Arg	Gly	Pro	Asp	Arg	Pro	Glu	Gly	Ile	Glu	Glu	705	710	715	720
Glu	Gly	Gly	Glu	Arg	Asp	Arg	Asp	Arg	Ser	Gly	Arg	Leu	Val	Asp	Gly	725	730	735	
Phe	Leu	Ala	Leu	Ile	Trp	Asp	Asp	Leu	Arg	Ser	Leu	Cys	Leu	Phe	Ser	740	745	750	

Tyr His Arg Leu Arg Asp Leu Leu Leu Ile Val Thr Arg Ile Val Glu
 755 760 765
 Leu Leu Gly Arg Arg Gly Trp Glu Val Leu Lys Tyr Trp Trp Asn Leu
 770 775 780
 Leu Gln Tyr Trp Ser Gln Glu Leu Lys Asn Ser Ala Val Ser Leu Leu
 785 790 795 800
 Asn Ala Thr Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Val Ile Glu
 805 810 815
 Val Val Gln Arg Ala Cys Arg Ala Ile Leu His Ile Pro Arg Arg Ile
 820 825 830
 Arg Gln Gly Leu Glu Arg Ala Leu Leu
 835 840

<210> 33
 <211> 632
 <212> PRT
 <213> Human immunodeficiency virus

<400> 33
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 Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Thr
 35 40 45
 Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val
 50 55 60
 His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
 65 70 75 80
 Gln Glu Val Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
 85 90 95
 Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
 100 105 110
 Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
 115 120 125
 Asn Cys Thr Asp Leu Met Asn Ala Thr Asn Thr Asn Thr Thr Ile Ile
 130 135 140
 Tyr Arg Trp Arg Gly Glu Ile Lys Asn Cys Ser Phe Asn Ile Thr Thr
 145 150 155 160
 Ser Ile Arg Asp Lys Val Gln Lys Glu Tyr Ala Leu Phe Tyr Lys Leu
 165 170 175

Asp	Val	Val	Pro	Ile	Asp	Asn	Asp	Asn	Thr	Ser	Tyr	Arg	Leu	Ile	Ser	180	185	190
Cys	Asn	Thr	Ser	Val	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Glu	195	200	205
Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	210	215	220
Cys	Asn	Asp	Lys	Lys	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Thr	Asn	Val	Ser	225	230	235
Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Arg	Pro	Val	Val	Ser	Thr	Gln	Leu	245	250	255
Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Val	Val	Ile	Arg	Ser	Glu	260	265	270
Asn	Phe	Thr	Asp	Asn	Ala	Lys	Thr	Ile	Ile	Val	Gln	Leu	Asn	Glu	Ser	275	280	285
Val	Glu	Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	290	295	300
His	Ile	Gly	Pro	Gly	Arg	Ala	Phe	Tyr	Thr	Thr	Gly	Glu	Ile	Ile	Gly	305	310	315
Asp	Ile	Arg	Gln	Ala	His	Cys	Asn	Ile	Ser	Arg	Ala	Lys	Trp	Asn	Asn	325	330	335
Thr	Leu	Lys	Gln	Ile	Val	Lys	Lys	Leu	Arg	Glu	Gln	Phe	Gly	Asn	Lys	340	345	350
Thr	Ile	Val	Phe	Asn	Gln	Ser	Ser	Gly	Gly	Asp	Pro	Glu	Ile	Val	Met	355	360	365
His	Ser	Phe	Asn	Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Thr	Gln	370	375	380
Leu	Phe	Asn	Ser	Thr	Trp	Asn	Gly	Thr	Trp	Asn	Asn	Thr	Glu	Gly	Asn	385	390	395
Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Glu	405	410	415
Val	Gly	Lys	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Arg	Gly	Gln	Ile	Arg	Cys	420	425	430
Ser	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Asn	Asn	435	440	445
Glu	Thr	Glu	Ile	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	450	455	460
Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	465	470	475

Val	Ala	Pro	Thr	Lys	Ala	Lys	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu
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Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Asn	Asn	Leu	Leu	Arg	Ala	Ile	Glu
			500					505					510		
Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu
		515					520					525			
Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu
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Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Ala	Val
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Pro	Trp	Asn	Ala	Ser	Trp	Ser	Asn	Lys	Ser	Leu	Asp	Glu	Ile	Trp	Asp
				565					570					575	
Asn	Met	Thr	Trp	Met	Glu	Trp	Glu	Arg	Glu	Ile	Asp	Asn	Tyr	Thr	Ser
			580					585					590		
Leu	Ile	Tyr	Thr	Leu	Ile	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn
		595					600					605			
Glu	Gln	Glu	Leu	Leu	Glu	Leu	Asp	Lys	Trp	Ala	Ser	Leu	Trp	Asn	Trp
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Phe	Asp	Ile	Thr	Asn	Trp	Leu	Trp								
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<210> 34

<211> 1927

<212> DNA

<213> Human immunodeficiency virus

<400> 34

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atactctgat cgaagaatct cagaaccaac aggagaaaaa cgaacaggaa ctgctggaac 1860
tggaacaagt ggcattcatt tggaactggg ttgacattac taactggctg tggtaaagat 1920
cttacaa 1927

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<210> 35

<211> 829

<212> PRT

<213> Human immunodeficiency virus

<400> 35

```

Met Arg Val Met Gly Ile Gln Arg Asn Cys Gln His Leu Trp Arg Trp
  1             5             10            15

```

```

Gly Ile Leu Ile Phe Gly Met Leu Ile Ile Cys Ser Ala Ala Glu Asn
      20             25            30

```

```

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Asn
      35             40            45

```

```

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val
      50             55            60

```

```

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
      65             70            75            80

```

```

Gln Glu Ile Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
      85             90            95

```

```

Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
      100            105           110

```

```

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
      115            120           125

```

```

Asn Cys Thr Asp Val Asn Ala Thr Asn Asn Thr Thr Asn Asn Glu Glu
      130            135           140

```

```

Ile Lys Asn Cys Ser Phe Asn Ile Thr Thr Glu Ile Arg Asp Lys Lys
      145            150           155           160

```

```

Lys Lys Val Tyr Ala Leu Phe Tyr Lys Leu Asp Val Val Pro Ile Asp
      165            170           175

```

```

Asp Asn Asn Ser Tyr Arg Leu Ile Asn Cys Asn Thr Ser Ala Ile Thr
      180            185           190

```

Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Glu	Pro	Ile	Pro	Ile	His	Tyr	Cys	195	200	205
Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Asn	Asp	Lys	Lys	Phe	Asn	210	215	220
Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His	Gly	225	230	235
Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	245	250	255
Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Ile	Thr	Asn	Asn	Ala	Lys	260	265	270
Thr	Ile	Ile	Val	Gln	Leu	Asn	Glu	Ser	Val	Glu	Ile	Asn	Cys	Thr	Arg	275	280	285
Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	Gly	Pro	Gly	Gln	Ala	290	295	300
Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	Cys	305	310	315
Asn	Ile	Ser	Arg	Thr	Lys	Trp	Asn	Lys	Thr	Leu	Gln	Gln	Val	Ala	Lys	325	330	335
Lys	Leu	Arg	Glu	His	Phe	Asn	Lys	Thr	Ile	Ile	Phe	Asn	Pro	Ser	Ser	340	345	350
Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Gly	Gly	Glu	355	360	365
Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Glu	Leu	Phe	Asn	Ser	Thr	Trp	Asn	Gly	370	375	380
Thr	Asn	Asn	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	385	390	395
Met	Trp	Gln	Gly	Val	Gly	Gln	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Glu	Gly	405	410	415
Lys	Ile	Arg	Cys	Thr	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	420	425	430
Gly	Gly	Asn	Asn	Asn	Thr	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	435	440	445
Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	450	455	460
Glu	Pro	Leu	Gly	Val	Ala	Pro	Thr	Lys	Ala	Lys	Arg	Arg	Val	Val	Glu	465	470	475
Arg	Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	Val	Phe	Leu	Gly	Phe	Leu	485	490	495

Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Ile	Thr	Leu	Thr	Val	500	505	510
Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu	515	520	525
Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr	Val	Trp	530	535	540
Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	545	550	555
Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	565	570	575
Cys	Thr	Thr	Asn	Val	Pro	Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Gln	580	585	590
Asp	Glu	Ile	Trp	Asp	Asn	Met	Thr	Trp	Met	Glu	Trp	Asp	Lys	Glu	Ile	595	600	605
Asn	Asn	Tyr	Thr	Asp	Ile	Ile	Tyr	Ser	Leu	Ile	Glu	Glu	Ser	Gln	Asn	610	615	620
Gln	Gln	Glu	Lys	Asn	Glu	Gln	Glu	Leu	Leu	Ala	Leu	Asp	Lys	Trp	Ala	625	630	635
Ser	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Asn	Trp	Leu	Trp	Tyr	Ile	Lys	645	650	655
Ile	Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile	Gly	Leu	Arg	Ile	Val	Phe	660	665	670
Ala	Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg	Gln	Gly	Tyr	Ser	Pro	Leu	675	680	685
Ser	Phe	Gln	Thr	Leu	Ile	Pro	Asn	Pro	Arg	Gly	Pro	Asp	Arg	Pro	Glu	690	695	700
Gly	Ile	Glu	Glu	Glu	Gly	Gly	Glu	Gln	Asp	Arg	Asp	Arg	Ser	Ile	Arg	705	710	715
Leu	Val	Asn	Gly	Phe	Leu	Ala	Leu	Ala	Trp	Asp	Asp	Leu	Arg	Ser	Leu	725	730	735
Cys	Leu	Phe	Ser	Tyr	His	Arg	Leu	Arg	Asp	Leu	Ile	Leu	Ile	Ala	Ala	740	745	750
Arg	Thr	Val	Glu	Leu	Leu	Gly	Arg	Arg	Gly	Trp	Glu	Ala	Leu	Lys	Tyr	755	760	765
Leu	Trp	Asn	Leu	Leu	Gln	Tyr	Trp	Gly	Gln	Glu	Leu	Lys	Asn	Ser	Ala	770	775	780
Ile	Ser	Leu	Leu	Asp	Thr	Thr	Ala	Ile	Ala	Val	Ala	Glu	Gly	Thr	Asp	785	790	795

Arg Val Ile Glu Val Val Gln Arg Val Cys Arg Ala Ile Leu Asn Ile
805 810 815

Pro Arg Arg Ile Arg Gln Gly Phe Glu Arg Ala Leu Leu
820 825

<210> 36

<211> 620

<212> PRT

<213> Human immunodeficiency virus

<400> 36

Met Arg Val Met Gly Ile Gln Arg Asn Cys Gln His Leu Trp Arg Trp
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Gly Ile Leu Ile Phe Gly Met Leu Ile Ile Cys Ser Ala Ala Glu Asn
20 25 30

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Asn
35 40 45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val
50 55 60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
65 70 75 80

Gln Glu Ile Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
85 90 95

Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
100 105 110

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
115 120 125

Asn Cys Thr Asp Val Asn Ala Thr Asn Asn Thr Thr Asn Asn Glu Glu
130 135 140

Ile Lys Asn Cys Ser Phe Asn Ile Thr Thr Glu Ile Arg Asp Lys Lys
145 150 155 160

Lys Lys Val Tyr Ala Leu Phe Tyr Lys Leu Asp Val Val Pro Ile Asp
165 170 175

Asp Asn Asn Ser Tyr Arg Leu Ile Asn Cys Asn Thr Ser Ala Ile Thr
180 185 190

Gln Ala Cys Pro Lys Val Ser Phe Glu Pro Ile Pro Ile His Tyr Cys
195 200 205

Ala Pro Ala Gly Phe Ala Ile Leu Lys Cys Asn Asp Lys Lys Phe Asn
210 215 220

Gly Thr Gly Pro Cys Lys Asn Val Ser Thr Val Gln Cys Thr His Gly

225		230		235		240
Ile Lys Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly Ser Leu Ala						
		245		250		255
Glu Glu Glu Ile Ile Ile Arg Ser Glu Asn Ile Thr Asn Asn Ala Lys						
		260		265		270
Thr Ile Ile Val Gln Leu Asn Glu Ser Val Glu Ile Asn Cys Thr Arg						
		275		280		285
Pro Asn Asn Asn Thr Arg Lys Ser Ile Arg Ile Gly Pro Gly Gln Ala						
		290		295		300
Phe Tyr Ala Thr Gly Asp Ile Ile Gly Asp Ile Arg Gln Ala His Cys						
305		310		315		320
Asn Ile Ser Arg Thr Lys Trp Asn Lys Thr Leu Gln Gln Val Ala Lys						
		325		330		335
Lys Leu Arg Glu His Phe Asn Lys Thr Ile Ile Phe Asn Pro Ser Ser						
		340		345		350
Gly Gly Asp Leu Glu Ile Thr Thr His Ser Phe Asn Cys Gly Gly Glu						
		355		360		365
Phe Phe Tyr Cys Asn Thr Ser Glu Leu Phe Asn Ser Thr Trp Asn Gly						
		370		375		380
Thr Asn Asn Thr Ile Thr Leu Pro Cys Arg Ile Lys Gln Ile Ile Asn						
385		390		395		400
Met Trp Gln Gly Val Gly Gln Ala Met Tyr Ala Pro Pro Ile Glu Gly						
		405		410		415
Lys Ile Arg Cys Thr Ser Asn Ile Thr Gly Leu Leu Leu Thr Arg Asp						
		420		425		430
Gly Gly Asn Asn Asn Thr Glu Thr Phe Arg Pro Gly Gly Gly Asp Met						
		435		440		445
Arg Asp Asn Trp Arg Ser Glu Leu Tyr Lys Tyr Lys Val Val Lys Ile						
		450		455		460
Glu Pro Leu Gly Val Ala Pro Thr Lys Ala Lys Thr Leu Thr Val Gln						
465		470		475		480
Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Ser Asn Leu Leu						
		485		490		495
Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp Gly						
		500		505		510
Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Val Glu Arg Tyr Leu Lys						
		515		520		525
Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly Lys Leu Ile Cys						

530

535

540

Thr Thr Asn Val Pro Trp Asn Ser Ser Trp Ser Asn Lys Ser Gln Asp
545 550 555 560

Glu Ile Trp Asp Asn Met Thr Trp Met Glu Trp Asp Lys Glu Ile Asn
565 570 575

Asn Tyr Thr Asp Ile Ile Tyr Ser Leu Ile Glu Glu Ser Gln Asn Gln
580 585 590

Gln Glu Lys Asn Glu Gln Glu Leu Leu Ala Leu Asp Lys Trp Ala Ser
595 600 605

Leu Trp Asn Trp Phe Asp Ile Thr Asn Trp Leu Trp
610 615 620

<210> 37

<211> 1891

<212> DNA

<213> Human immunodeficiency virus

<400> 37

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aaaatgaaca ggaactcttg gctctggaca aatgggcttc actgtggaac tggttcgaca 1860
tcacaaattg gctctggtaa agatcttaca a 1891

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<210> 38
<211> 845
<212> PRT
<213> Human immunodeficiency virus

<400> 38

Met	Arg	Val	Met	Gly	Ile	Gln	Arg	Asn	Cys	Gln	His	Leu	Leu	Arg	Trp
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Gly	Thr	Met	Ile	Leu	Gly	Met	Ile	Ile	Ile	Cys	Ser	Ala	Ala	Glu	Asn
			20					25					30		
Leu	Trp	Val	Thr	Val	Tyr	Tyr	Gly	Val	Pro	Val	Trp	Lys	Asp	Ala	Glu
		35					40					45			
Thr	Thr	Leu	Phe	Cys	Ala	Ser	Asp	Ala	Lys	Ala	Tyr	Glu	Thr	Glu	Met
		50				55					60				
His	Asn	Val	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro
65					70					75					80
Gln	Glu	Ile	His	Leu	Glu	Asn	Val	Thr	Glu	Glu	Phe	Asn	Met	Trp	Lys
			85						90					95	
Asn	Asn	Met	Val	Glu	Gln	Met	His	Thr	Asp	Ile	Ile	Ser	Leu	Trp	Asp
			100					105					110		
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu
		115					120					125			
Asn	Cys	Ser	Asn	Val	Asn	Val	Thr	Asn	Asn	Thr	Thr	Asn	Thr	His	Glu
	130					135					140				
Glu	Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Met	Thr	Thr	Glu	Leu	Arg	Asp
145				150					155						160
Lys	Lys	Gln	Lys	Val	Tyr	Ser	Leu	Phe	Tyr	Arg	Leu	Asp	Val	Val	Gln
			165						170					175	
Ile	Asn	Glu	Asn	Asn	Ser	Asn	Ser	Ser	Tyr	Arg	Leu	Ile	Asn	Cys	Asn
		180						185					190		
Thr	Ser	Ala	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Glu	Pro	Ile
		195					200					205			
Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Lys
	210					215					220				
Asp	Lys	Glu	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val
225					230					235					240
Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu
			245						250					255	
Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Val	Ile	Ile	Arg	Ser	Glu	Asn	Ile
			260					265					270		

Thr	Asn	Asn	Ala	Lys	Thr	Ile	Ile	Val	Gln	Leu	Thr	Lys	Pro	Val	Lys		
		275						280				285					
Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile		
	290					295					300						
Gly	Pro	Gly	Gln	Ala	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile		
305					310					315					320		
Arg	Gln	Ala	His	Cys	Asn	Val	Ser	Arg	Ser	Glu	Trp	Asn	Lys	Thr	Leu		
				325					330					335			
Gln	Lys	Val	Ala	Lys	Gln	Leu	Arg	Lys	Tyr	Phe	Lys	Asn	Lys	Thr	Ile		
			340					345					350				
Ile	Phe	Thr	Asn	Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser		
		355					360					365					
Phe	Asn	Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Gly	Leu	Phe		
	370					375					380						
Asn	Ser	Thr	Trp	Asn	Asn	Gly	Thr	Met	Lys	Asn	Thr	Ile	Thr	Leu	Pro		
385					390					395					400		
Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Arg	Ala	Gly	Gln	Ala		
				405					410					415			
Met	Tyr	Ala	Pro	Pro	Ile	Gln	Gly	Val	Ile	Arg	Cys	Glu	Ser	Asn	Ile		
			420					425					430				
Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Asn	Asn	Asn	Thr	Asn	Glu		
		435					440					445					
Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu		
	450					455					460						
Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	Val	Ala	Pro		
465					470					475					480		
Thr	Arg	Ala	Lys	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly		
				485					490					495			
Ile	Gly	Ala	Val	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met		
			500					505					510				
Gly	Ala	Ala	Ser	Ile	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser		
		515					520					525					
Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln		
	530					535					540						
Gln	His	Leu	Leu	Lys	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala		
545					550					555					560		
Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly		
				565					570					575			

Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro	Trp	580	585	590
Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Gln	Asn	Glu	Ile	Trp	Asp	Asn	Met	595	600	605
Thr	Trp	Leu	Gln	Trp	Asp	Lys	Glu	Ile	Ser	Asn	Tyr	Thr	His	Ile	Ile	610	615	620
Tyr	Asn	Leu	Ile	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu	Gln	625	630	635
Asp	Leu	Leu	Ala	Leu	Asp	Lys	Trp	Ala	Asn	Leu	Trp	Asn	Trp	Phe	Asp	645	650	655
Ile	Ser	Asn	Trp	Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	Val	Gly	660	665	670
Gly	Leu	Ile	Gly	Leu	Arg	Ile	Val	Phe	Ala	Val	Leu	Ser	Val	Ile	Asn	675	680	685
Arg	Val	Arg	Gln	Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Thr	His	Thr	Pro	690	695	700
Asn	Pro	Arg	Gly	Leu	Asp	Arg	Pro	Gly	Arg	Ile	Glu	Glu	Glu	Gly	Gly	705	710	715
Glu	Gln	Gly	Arg	Asp	Arg	Ser	Ile	Arg	Leu	Val	Ser	Gly	Phe	Leu	Ala	725	730	735
Leu	Ala	Trp	Asp	Asp	Leu	Arg	Ser	Leu	Cys	Leu	Phe	Ser	Tyr	His	Arg	740	745	750
Leu	Arg	Asp	Phe	Ile	Leu	Ile	Ala	Ala	Arg	Thr	Val	Glu	Leu	Leu	Gly	755	760	765
His	Ser	Ser	Leu	Lys	Gly	Leu	Arg	Leu	Gly	Trp	Glu	Gly	Leu	Lys	Tyr	770	775	780
Leu	Trp	Asn	Leu	Leu	Leu	Tyr	Trp	Gly	Arg	Glu	Leu	Lys	Ile	Ser	Ala	785	790	795
Ile	Asn	Leu	Val	Asp	Thr	Ile	Ala	Ile	Ala	Val	Ala	Gly	Trp	Thr	Asp	805	810	815
Arg	Val	Ile	Glu	Ile	Gly	Gln	Arg	Ile	Gly	Arg	Ala	Ile	Leu	His	Ile	820	825	830
Pro	Arg	Arg	Ile	Arg	Gln	Gly	Leu	Glu	Arg	Ala	Leu	Leu				835	840	845

<210> 39

<211> 629

<212> PRT

<213> Human immunodeficiency virus

<400> 39

Met	Arg	Val	Met	Gly	Ile	Gln	Arg	Asn	Cys	Gln	His	Leu	Leu	Arg	Trp
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Gly	Thr	Met	Ile	Leu	Gly	Met	Ile	Ile	Ile	Cys	Ser	Ala	Ala	Glu	Asn
			20					25					30		
Leu	Trp	Val	Thr	Val	Tyr	Tyr	Gly	Val	Pro	Val	Trp	Lys	Asp	Ala	Glu
		35					40					45			
Thr	Thr	Leu	Phe	Cys	Ala	Ser	Asp	Ala	Lys	Ala	Tyr	Glu	Thr	Glu	Met
	50					55					60				
His	Asn	Val	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro
65					70					75					80
Gln	Glu	Ile	His	Leu	Glu	Asn	Val	Thr	Glu	Glu	Phe	Asn	Met	Trp	Lys
				85					90					95	
Asn	Asn	Met	Val	Glu	Gln	Met	His	Thr	Asp	Ile	Ile	Ser	Leu	Trp	Asp
			100					105					110		
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu
		115					120					125			
Asn	Cys	Ser	Asn	Val	Asn	Val	Thr	Asn	Asn	Thr	Thr	Asn	Thr	His	Glu
	130					135					140				
Glu	Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Met	Thr	Thr	Glu	Leu	Arg	Asp
145					150					155					160
Lys	Lys	Gln	Lys	Val	Tyr	Ser	Leu	Phe	Tyr	Arg	Leu	Asp	Val	Val	Gln
				165					170					175	
Ile	Asn	Glu	Asn	Asn	Ser	Asn	Ser	Ser	Tyr	Arg	Leu	Ile	Asn	Cys	Asn
			180					185					190		
Thr	Ser	Ala	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Glu	Pro	Ile
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Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Lys
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225					230					235					240
Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu
				245					250					255	
Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Val	Ile	Ile	Arg	Ser	Glu	Asn	Ile
			260					265					270		
Thr	Asn	Asn	Ala	Lys	Thr	Ile	Ile	Val	Gln	Leu	Thr	Lys	Pro	Val	Lys
	275						280					285			
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290					295					300					
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Arg	Gln	Ala	His	Cys	Asn	Val	Ser	Arg	Ser	Glu	Trp	Asn	Lys	Thr	Leu
				325					330					335	
Gln	Lys	Val	Ala	Lys	Gln	Leu	Arg	Lys	Tyr	Phe	Lys	Asn	Lys	Thr	Ile
			340					345					350		
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			355				360								
Phe	Asn	Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Gly	Leu	Phe
	370					375					380				
Asn	Ser	Thr	Trp	Asn	Asn	Gly	Thr	Met	Lys	Asn	Thr	Ile	Thr	Leu	Pro
385					390					395					400
Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Arg	Ala	Gly	Gln	Ala
				405					410					415	
Met	Tyr	Ala	Pro	Pro	Ile	Gln	Gly	Val	Ile	Arg	Cys	Glu	Ser	Asn	Ile
			420					425						430	
Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Asn	Asn	Asn	Thr	Asn	Glu
				435				440						445	
Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu
				450				455						460	
Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	Val	Ala	Pro
465					470					475					480
Thr	Arg	Ala	Lys	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly
				485					490					495	
Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln
				500				505						510	
His	Leu	Leu	Lys	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg
				515				520						525	
Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile
				530				535						540	
Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro	Trp	Asn
545					550					555					560
Ser	Ser	Trp	Ser	Asn	Lys	Ser	Gln	Asn	Glu	Ile	Trp	Asp	Asn	Met	Thr
				565					570					575	
Trp	Leu	Gln	Trp	Asp	Lys	Glu	Ile	Ser	Asn	Tyr	Thr	His	Ile	Ile	Tyr
				580					585					590	
Asn	Leu	Ile	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu	Gln	Asp

595

600

605

Leu Leu Ala Leu Asp Lys Trp Ala Asn Leu Trp Asn Trp Phe Asp Ile
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Ser Asn Trp Leu Trp
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<210> 40

<211> 1918

<212> DNA

<213> Human immunodeficiency virus

<400> 40

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<210> 41

<211> 835

<212> PRT

<213> Human immunodeficiency virus

<400> 41

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			20					25					30			
Leu	Trp	Val	Thr	Val	Tyr	Tyr	Gly	Val	Pro	Val	Trp	Lys	Glu	Ala	Lys	
		35					40					45				
Thr	Thr	Leu	Phe	Cys	Ala	Ser	Asp	Ala	Lys	Ala	Tyr	Glu	Lys	Glu	Val	
	50					55					60					
His	Asn	Val	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro	
65					70					75					80	
Gln	Glu	Ile	Val	Leu	Glu	Asn	Val	Thr	Glu	Asn	Phe	Asn	Met	Trp	Lys	
				85					90					95		
Asn	Asp	Met	Val	Asp	Gln	Met	His	Glu	Asp	Ile	Ile	Ser	Leu	Trp	Asp	
			100					105					110			
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu	
		115					120					125				
Asn	Cys	Thr	Asn	Ala	Thr	Asn	Ala	Thr	Asn	Thr	Met	Gly	Glu	Ile	Lys	
	130					135					140					
Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	Glu	Leu	Arg	Asp	Lys	Lys	Gln	Lys	
145					150					155					160	
Val	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Ile	Val	Pro	Leu	Asn	Glu	Asn	
				165					170					175		
Asn	Ser	Tyr	Arg	Leu	Ile	Asn	Cys	Asn	Thr	Ser	Ala	Ile	Thr	Gln	Ala	
			180					185					190			
Cys	Pro	Lys	Val	Ser	Phe	Asp	Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro	
		195					200					205				
Ala	Gly	Tyr	Ala	Ile	Leu	Lys	Cys	Asn	Asn	Lys	Thr	Phe	Asn	Gly	Thr	
	210					215					220					
Gly	Pro	Cys	Asn	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	
225					230					235					240	
Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	
				245					250					255		
Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Leu	Thr	Asn	Asn	Ala	Lys	Thr	Ile	
			260					265					270			
Ile	Val	His	Leu	Asn	Glu	Ser	Val	Glu	Ile	Val	Cys	Thr	Arg	Pro	Asn	
		275					280					285				
Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	Gly	Pro	Gly	Gln	Thr	Phe	Tyr	
		290				295					300					
Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	Cys	Asn	Ile	
305					310					315					320	

Ser	Glu	Asp	Lys	Trp	Asn	Lys	Thr	Leu	Gln	Lys	Val	Ser	Lys	Lys	Leu	325	330	335
Lys	Glu	His	Phe	Pro	Asn	Lys	Thr	Ile	Lys	Phe	Glu	Pro	Ser	Ser	Gly	340	345	350
Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Arg	Gly	Glu	Phe	355	360	365
Phe	Tyr	Cys	Asn	Thr	Ser	Lys	Leu	Phe	Asn	Ser	Thr	Tyr	Asn	Ser	Thr	370	375	380
Asn	Ser	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	385	390	395
Trp	Gln	Glu	Val	Gly	Arg	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Ala	Gly	Asn	405	410	415
Ile	Thr	Cys	Lys	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly	420	425	430
Gly	Lys	Asn	Asn	Thr	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	435	440	445
Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Glu	Ile	Lys	450	455	460
Pro	Leu	Gly	Ile	Ala	Pro	Thr	Lys	Ala	Lys	Arg	Arg	Val	Val	Glu	Arg	465	470	475
Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	Val	Phe	Leu	Gly	Phe	Leu	Gly	485	490	495
Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Ile	Thr	Leu	Thr	Val	Gln	500	505	510
Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu	Leu	515	520	525
Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Met	Leu	Gln	Leu	Thr	Val	Trp	Gly	530	535	540
Ile	Lys	Gln	Leu	Gln	Thr	Arg	Val	Leu	Ala	Ile	Glu	Arg	Tyr	Leu	Lys	545	550	555
Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	565	570	575
Thr	Thr	Ala	Val	Pro	Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Gln	Glu	580	585	590
Asp	Ile	Trp	Asp	Asn	Met	Thr	Trp	Met	Gln	Trp	Asp	Arg	Glu	Ile	Ser	595	600	605
Asn	Tyr	Thr	Asp	Thr	Ile	Tyr	Arg	Leu	Leu	Glu	Asp	Ser	Gln	Asn	Gln	610	615	620

Gln Glu Lys Asn Glu Lys Asp Leu Leu Ala Leu Asp Ser Trp Lys Asn
 625 630 635 640
 Leu Trp Asn Trp Phe Asp Ile Thr Asn Trp Leu Trp Tyr Ile Lys Ile
 645 650 655
 Phe Ile Met Ile Val Gly Gly Leu Ile Gly Leu Arg Ile Ile Phe Ala
 660 665 670
 Val Leu Ser Ile Val Asn Arg Val Arg Gln Gly Tyr Ser Pro Leu Ser
 675 680 685
 Phe Gln Thr Leu Thr Pro Asn Pro Arg Gly Pro Asp Arg Leu Gly Arg
 690 695 700
 Ile Glu Glu Glu Gly Gly Glu Gln Asp Arg Asp Arg Ser Ile Arg Leu
 705 710 715 720
 Val Ser Gly Phe Leu Ala Leu Ala Trp Asp Asp Leu Arg Ser Leu Cys
 725 730 735
 Leu Phe Ser Tyr His Arg Leu Arg Asp Phe Ile Leu Ile Ala Ala Arg
 740 745 750
 Ala Val Glu Leu Leu Gly Arg Ser Ser Leu Arg Gly Leu Gln Arg Gly
 755 760 765
 Trp Glu Ala Leu Lys Tyr Leu Gly Ser Leu Val Gln Tyr Trp Gly Leu
 770 775 780
 Glu Leu Lys Lys Ser Ala Ile Ser Leu Leu Asp Thr Ile Ala Ile Ala
 785 790 795 800
 Val Ala Glu Gly Thr Asp Arg Ile Ile Glu Leu Ile Gln Arg Ile Cys
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 Ala Leu Gln
 835

<210> 42

<211> 619

<212> PRT

<213> Human immunodeficiency virus

<400> 42

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 Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Lys

35					40					45					
Thr	Thr	Leu	Phe	Cys	Ala	Ser	Asp	Ala	Lys	Ala	Tyr	Glu	Lys	Glu	Val
	50					55					60				
His	Asn	Val	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro
	65					70					75				80
Gln	Glu	Ile	Val	Leu	Glu	Asn	Val	Thr	Glu	Asn	Phe	Asn	Met	Trp	Lys
				85					90					95	
Asn	Asp	Met	Val	Asp	Gln	Met	His	Glu	Asp	Ile	Ile	Ser	Leu	Trp	Asp
			100					105					110		
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu
		115					120					125			
Asn	Cys	Thr	Asn	Ala	Thr	Asn	Ala	Thr	Asn	Thr	Met	Gly	Glu	Ile	Lys
	130					135					140				
Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	Glu	Leu	Arg	Asp	Lys	Lys	Gln	Lys
	145			150					155						160
Val	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Ile	Val	Pro	Leu	Asn	Glu	Asn
			165					170					175		
Asn	Ser	Tyr	Arg	Leu	Ile	Asn	Cys	Asn	Thr	Ser	Ala	Ile	Thr	Gln	Ala
		180						185					190		
Cys	Pro	Lys	Val	Ser	Phe	Asp	Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro
		195					200					205			
Ala	Gly	Tyr	Ala	Ile	Leu	Lys	Cys	Asn	Asn	Lys	Thr	Phe	Asn	Gly	Thr
	210					215					220				
Gly	Pro	Cys	Asn	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Lys
	225			230					235						240
Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu
			245					250					255		
Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Leu	Thr	Asn	Asn	Ala	Lys	Thr	Ile
			260				265						270		
Ile	Val	His	Leu	Asn	Glu	Ser	Val	Glu	Ile	Val	Cys	Thr	Arg	Pro	Asn
	275						280					285			
Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	Gly	Pro	Gly	Gln	Thr	Phe	Tyr
	290					295					300				
Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	Cys	Asn	Ile
	305			310					315						320
Ser	Glu	Asp	Lys	Trp	Asn	Lys	Thr	Leu	Gln	Lys	Val	Ser	Lys	Lys	Leu
			325					330					335		
Lys	Glu	His	Phe	Pro	Asn	Lys	Thr	Ile	Lys	Phe	Glu	Pro	Ser	Ser	Gly

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Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Arg	Gly	Glu	Phe
	355						360					365			
Phe	Tyr	Cys	Asn	Thr	Ser	Lys	Leu	Phe	Asn	Ser	Thr	Tyr	Asn	Ser	Thr
	370					375					380				
Asn	Ser	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met
385					390					395					400
Trp	Gln	Glu	Val	Gly	Arg	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Ala	Gly	Asn
				405					410					415	
Ile	Thr	Cys	Lys	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly
			420					425					430		
Gly	Lys	Asn	Asn	Thr	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg
		435					440					445			
Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Glu	Ile	Lys
	450					455					460				
Pro	Leu	Gly	Ile	Ala	Pro	Thr	Lys	Ala	Lys	Thr	Leu	Thr	Val	Gln	Ala
465					470					475					480
Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu	Leu	Arg
				485				490						495	
Ala	Ile	Glu	Ala	Gln	Gln	His	Met	Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile
			500					505					510		
Lys	Gln	Leu	Gln	Thr	Arg	Val	Leu	Ala	Ile	Glu	Arg	Tyr	Leu	Lys	Asp
	515						520					525			
Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr
	530					535					540				
Thr	Ala	Val	Pro	Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Gln	Glu	Asp
545					550					555					560
Ile	Trp	Asp	Asn	Met	Thr	Trp	Met	Gln	Trp	Asp	Arg	Glu	Ile	Ser	Asn
				565				570						575	
Tyr	Thr	Asp	Thr	Ile	Tyr	Arg	Leu	Leu	Glu	Asp	Ser	Gln	Asn	Gln	Gln
			580					585					590		
Glu	Lys	Asn	Glu	Lys	Asp	Leu	Leu	Ala	Leu	Asp	Ser	Trp	Lys	Asn	Leu
	595					600						605			
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<210> 43
 <211> 1888
 <212> DNA

<213> Human immunodeficiency virus

<400> 43

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<210> 44

<211> 842

<212> PRT

<213> Human immunodeficiency virus

<400> 44

Met Arg Val Lys Gly Ile Gln Arg Asn Trp Gln His Leu Trp Lys Trp
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Gly Thr Leu Ile Leu Gly Leu Val Ile Ile Cys Ser Ala Ser Asn Asn
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Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Glu Asp Ala Asp
35 40 45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Ser Thr Glu Arg
50 55 60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
65 70 75 80

Gln	Glu	Ile	Thr	Leu	Glu	Asn	Val	Thr	Glu	Asn	Phe	Asn	Met	Trp	Lys	85	90	95
Asn	Asn	Met	Val	Glu	Gln	Met	His	Glu	Asp	Ile	Ile	Ser	Leu	Trp	Asp	100	105	110
Glu	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu	115	120	125
Asn	Cys	Thr	Asp	Val	Asn	Val	Thr	Asn	Asn	Asn	Thr	Asn	Asn	Thr	Lys	130	135	140
Lys	Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	Glu	Ile	Arg	Asp	145	150	155
Lys	Lys	Lys	Lys	Glu	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Val	Val	Pro	165	170	175
Ile	Asn	Asp	Asn	Gly	Asn	Ser	Ser	Ile	Tyr	Arg	Leu	Ile	Asn	Cys	Asn	180	185	190
Val	Ser	Thr	Ile	Lys	Gln	Ala	Cys	Pro	Lys	Val	Thr	Phe	Asp	Pro	Ile	195	200	205
Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Arg	210	215	220
Asp	Lys	Lys	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val	225	230	235
Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	245	250	255
Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Ile	260	265	270
Thr	Asp	Asn	Thr	Lys	Val	Ile	Ile	Val	Gln	Leu	Asn	Glu	Thr	Ile	Glu	275	280	285
Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	290	295	300
Gly	Pro	Gly	Gln	Ala	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	305	310	315
Arg	Gln	Ala	His	Cys	Asn	Val	Ser	Arg	Thr	Lys	Trp	Asn	Glu	Met	Leu	325	330	335
Gln	Lys	Val	Lys	Ala	Gln	Leu	Lys	Lys	Ile	Phe	Asn	Lys	Ser	Ile	Thr	340	345	350
Phe	Asn	Ser	Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	355	360	365
Asn	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Gly	Leu	Phe	Asn	370	375	380

Asn	Ser	Leu	Leu	Asn	Ser	Thr	Asn	Ser	Thr	Ile	Thr	Leu	Pro	Cys	Lys
385					390					395					400
Ile	Lys	Gln	Ile	Val	Arg	Met	Trp	Gln	Arg	Val	Gly	Gln	Ala	Met	Tyr
				405					410					415	
Ala	Pro	Pro	Ile	Ala	Gly	Asn	Ile	Thr	Cys	Arg	Ser	Asn	Ile	Thr	Gly
			420					425					430		
Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Asn	Asn	Asn	Thr	Glu	Thr	Phe	Arg
		435					440					445			
Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys
	450					455					460				
Tyr	Lys	Ile	Val	Lys	Ile	Lys	Pro	Leu	Gly	Val	Ala	Pro	Thr	Arg	Ala
465					470					475					480
Arg	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Leu	Gly	Ala
				485					490					495	
Val	Leu	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala
			500					505					510		
Ser	Ile	Thr	Leu	Thr	Val	Gln	Val	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val
		515					520					525			
Gln	Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu
		530				535					540				
Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu
545					550					555					560
Ala	Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly
				565					570					575	
Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro	Trp	Asn	Thr	Ser
			580					585					590		
Trp	Ser	Asn	Lys	Ser	Tyr	Asn	Glu	Ile	Trp	Asp	Asn	Met	Thr	Trp	Ile
		595					600					605			
Glu	Trp	Glu	Arg	Glu	Ile	Ser	Asn	Tyr	Thr	Gln	Gln	Ile	Tyr	Ser	Leu
	610					615					620				
Ile	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu	Gln	Asp	Leu	Leu
625					630					635					640
Ala	Leu	Asp	Lys	Trp	Ala	Ser	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Lys
				645					650					655	
Trp	Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile
			660					665					670		
Gly	Leu	Arg	Ile	Val	Phe	Ala	Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg
		675					680					685			

Gln Gly Tyr Ser Pro Leu Ser Phe Gln Thr Leu Thr His His Gln Arg
 690 695 700
 Glu Pro Asp Arg Pro Glu Arg Ile Glu Glu Gly Gly Gly Glu Gln Asp
 705 710 715 720
 Lys Asp Arg Ser Ile Arg Leu Val Ser Gly Phe Leu Ala Leu Ala Trp
 725 730 735
 Asp Asp Leu Arg Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp
 740 745 750
 Phe Ile Leu Ile Ala Ala Arg Thr Val Glu Leu Leu Gly Arg Ser Ser
 755 760 765
 Leu Lys Gly Leu Arg Leu Gly Trp Glu Gly Leu Lys Tyr Leu Trp Asn
 770 775 780
 Leu Leu Leu Tyr Trp Gly Gln Glu Leu Lys Asn Ser Ala Ile Asn Leu
 785 790 795 800
 Leu Asp Thr Ile Ala Ile Ala Val Ala Asn Trp Thr Asp Arg Val Ile
 805 810 815
 Glu Val Ala Gln Arg Ala Cys Arg Ala Ile Leu Asn Ile Pro Arg Arg
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 Ile Arg Gln Gly Leu Glu Arg Ala Leu Leu
 835 840

<210> 45
 <211> 626
 <212> PRT
 <213> Human immunodeficiency virus

<400> 45

Met Arg Val Lys Gly Ile Gln Arg Asn Trp Gln His Leu Trp Lys Trp
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 Gly Thr Leu Ile Leu Gly Leu Val Ile Ile Cys Ser Ala Ser Asn Asn
 20 25 30
 Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Glu Asp Ala Asp
 35 40 45
 Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Ser Thr Glu Arg
 50 55 60
 His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
 65 70 75 80
 Gln Glu Ile Thr Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
 85 90 95
 Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp

100					105					110					
Glu	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu
		115					120					125			
Asn	Cys	Thr	Asp	Val	Asn	Val	Thr	Asn	Asn	Asn	Thr	Asn	Asn	Thr	Lys
	130					135					140				
Lys	Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	Glu	Ile	Arg	Asp
145					150					155					160
Lys	Lys	Lys	Lys	Glu	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Val	Val	Pro
				165					170					175	
Ile	Asn	Asp	Asn	Gly	Asn	Ser	Ser	Ile	Tyr	Arg	Leu	Ile	Asn	Cys	Asn
			180					185					190		
Val	Ser	Thr	Ile	Lys	Gln	Ala	Cys	Pro	Lys	Val	Thr	Phe	Asp	Pro	Ile
		195					200					205			
Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Arg
	210					215					220				
Asp	Lys	Lys	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val
225					230					235					240
Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu
				245					250					255	
Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Ile
			260					265					270		
Thr	Asp	Asn	Thr	Lys	Val	Ile	Ile	Val	Gln	Leu	Asn	Glu	Thr	Ile	Glu
		275					280					285			
Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile
	290					295					300				
Gly	Pro	Gly	Gln	Ala	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile
305					310					315					320
Arg	Gln	Ala	His	Cys	Asn	Val	Ser	Arg	Thr	Lys	Trp	Asn	Glu	Met	Leu
				325					330				335		
Gln	Lys	Val	Lys	Ala	Gln	Leu	Lys	Lys	Ile	Phe	Asn	Lys	Ser	Ile	Thr
		340					345						350		
Phe	Asn	Ser	Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe
		355					360					365			
Asn	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Gly	Leu	Phe	Asn
	370					375					380				
Asn	Ser	Leu	Leu	Asn	Ser	Thr	Asn	Ser	Thr	Ile	Thr	Leu	Pro	Cys	Lys
385					390					395					400
Ile	Lys	Gln	Ile	Val	Arg	Met	Trp	Gln	Arg	Val	Gly	Gln	Ala	Met	Tyr

405					410					415					
Ala	Pro	Pro	Ile	Ala	Gly	Asn	Ile	Thr	Cys	Arg	Ser	Asn	Ile	Thr	Gly
			420					425					430		
Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Asn	Asn	Asn	Thr	Glu	Thr	Phe	Arg
		435					440					445			
Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys
	450					455					460				
Tyr	Lys	Ile	Val	Lys	Ile	Lys	Pro	Leu	Gly	Val	Ala	Pro	Thr	Arg	Ala
465					470					475					480
Arg	Thr	Leu	Thr	Val	Gln	Val	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln
			485						490					495	
Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu	Leu
			500					505					510		
Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala
		515					520					525			
Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys
	530					535					540				
Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro	Trp	Asn	Thr	Ser	Trp
545					550					555					560
Ser	Asn	Lys	Ser	Tyr	Asn	Glu	Ile	Trp	Asp	Asn	Met	Thr	Trp	Ile	Glu
			565					570						575	
Trp	Glu	Arg	Glu	Ile	Ser	Asn	Tyr	Thr	Gln	Gln	Ile	Tyr	Ser	Leu	Ile
			580					585					590		
Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu	Gln	Asp	Leu	Leu	Ala
		595					600					605			
Leu	Asp	Lys	Trp	Ala	Ser	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Lys	Trp
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Leu	Trp														
625															

<210> 46
 <211> 1909
 <212> DNA
 <213> Human immunodeficiency virus

<400> 46
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 tcacagttta ttacggcgtg cccgtttggg aggacgcaga cacaactctt ttttgtgcca 180
 gcgacgctaa ggcttattca acagagagggc ataacgtttg ggctacacat gcatgcgtgc 240
 cgaccgatcc taatccccag gaaatcactc ttgagaatgt tacagagaat tttaatatgt 300
 ggaagaacaa catggttgaa cagatgcatg aagacataat ttctctctgg gatgaatctc 360

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tgaaaccttg cgtgaagctt acaccactgt gcgttacccct gaattgcact gacgtcaatg 420
tcacaaataa taataccaac aatacaaaaaa aagaaatcaa aaattgttct ttcaacataa 480
ccaccgagat acgcgataaa aaaaagaaaag aatacgccct gttctacaga ctcgatgtgg 540
tcccaattaa tgacaacgga aattcttcca tctaccgact tatcaattgt aacgtgtcta 600
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<210> 47

<211> 854

<212> PRT

<213> Human immunodeficiency virus

<400> 47

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Met Arg Val Lys Glu Thr Gln Met Asn Trp Pro Asn Leu Trp Lys Trp
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Gly Thr Leu Ile Leu Gly Leu Val Ile Ile Cys Ser Ala Ser Asp Asn
      20                25                30

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Arg Asp Ala Asp
      35                40                45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala His Glu Thr Glu Val
      50                55                60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
      65                70                75                80

Gln Glu Ile His Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
      85                90                95

Asn Asn Met Val Glu Gln Met Gln Glu Asp Val Ile Ser Leu Trp Asp
      100                105                110

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
      115                120                125

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Asn	Cys	Thr	Asn	Ala	Asn	Leu	Thr	Asn	Val	Asn	Asn	Ile	Thr	Asn	Val	
130						135					140					
Ser	Asn	Ile	Ile	Gly	Asn	Ile	Thr	Asn	Glu	Val	Arg	Asn	Cys	Ser	Phe	
145					150					155					160	
Asn	Met	Thr	Thr	Glu	Leu	Arg	Asp	Lys	Lys	Gln	Lys	Val	His	Ala	Leu	
				165					170					175		
Phe	Tyr	Lys	Leu	Asp	Ile	Val	Gln	Ile	Glu	Asp	Asn	Asn	Ser	Tyr	Arg	
			180					185					190			
Leu	Ile	Asn	Cys	Asn	Thr	Ser	Val	Ile	Lys	Gln	Ala	Cys	Pro	Lys	Ile	
		195					200					205				
Ser	Phe	Asp	Pro	Ile	Pro	Ile	His	Tyr	Cys	Thr	Pro	Ala	Gly	Tyr	Ala	
	210					215					220					
Ile	Leu	Lys	Cys	Asn	Asp	Lys	Asn	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	
225					230					235					240	
Asn	Val	Ser	Ser	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	
				245					250					255		
Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile	
		260						265					270			
Arg	Ser	Glu	Asn	Leu	Thr	Asn	Asn	Ala	Lys	Thr	Ile	Ile	Val	His	Leu	
	275						280						285			
Asn	Lys	Ser	Val	Glu	Ile	Asn	Cys	Thr	Arg	Pro	Ser	Asn	Asn	Thr	Arg	
	290					295					300					
Thr	Ser	Ile	Thr	Ile	Gly	Pro	Gly	Gln	Val	Phe	Tyr	Arg	Thr	Gly	Asp	
305					310					315					320	
Ile	Ile	Gly	Asp	Ile	Arg	Lys	Ala	Tyr	Cys	Glu	Ile	Asn	Gly	Thr	Lys	
			325						330					335		
Trp	Asn	Glu	Val	Leu	Lys	Gln	Val	Thr	Glu	Lys	Leu	Lys	Glu	His	Phe	
		340						345					350			
Asn	Asn	Lys	Thr	Ile	Ile	Phe	Gln	Pro	Pro	Ser	Gly	Gly	Asp	Leu	Glu	
	355						360					365				
Ile	Thr	Met	His	His	Phe	Asn	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	
	370					375					380					
Thr	Thr	Lys	Leu	Phe	Asn	Asn	Thr	Cys	Ile	Gly	Asn	Glu	Thr	Met	Glu	
385					390					395					400	
Gly	Cys	Asn	Gly	Thr	Ile	Ile	Leu	Pro	Cys	Lys	Ile	Lys	Gln	Ile	Ile	
			405						410					415		
Asn	Met	Trp	Gln	Gly	Ala	Gly	Gln	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Ser	
		420						425					430			

Gly 435	Arg	Ile	Asn	Cys	Val	Ser	Asn	Ile	Thr	Gly	Ile	Leu	Leu	Thr	Arg
Asp 450	Gly	Gly	Ala	Asn	Asn	Thr	Asn	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly
Asn 465	Ile	Lys	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val
Gln	Ile	Glu	Pro	Leu	Gly	Ile	Ala	Pro	Thr	Arg	Ala	Lys	Arg	Arg	Val
Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	Met	Ile	Phe	Gly
Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Ile	Thr	Leu
Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser
Asn 545	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr
Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg
Tyr	Leu	Lys	Asp	Gln	Lys	Phe	Leu	Gly	Leu	Trp	Gly	Cys	Ser	Gly	Lys
Ile	Ile	Cys	Thr	Thr	Ala	Val	Pro	Trp	Asn	Ser	Thr	Trp	Ser	Asn	Arg
Ser	Phe	Glu	Glu	Ile	Trp	Asn	Asn	Met	Thr	Trp	Ile	Glu	Trp	Glu	Arg
Glu 625	Ile	Ser	Asn	Tyr	Thr	Asn	Gln	Ile	Tyr	Glu	Ile	Leu	Thr	Glu	Ser
Gln	Asn	Gln	Gln	Asp	Arg	Asn	Glu	Lys	Asp	Leu	Leu	Glu	Leu	Asp	Lys
Trp	Ala	Ser	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Asn	Trp	Leu	Trp	Tyr
Ile	Lys	Ile	Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile	Gly	Leu	Arg	Ile
Ile	Phe	Ala	Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg	Gln	Gly	Tyr	Ser
Pro 705	Leu	Ser	Phe	Gln	Thr	Pro	Thr	His	His	Gln	Arg	Glu	Pro	Asp	Arg
Pro	Glu	Arg	Ile	Glu	Glu	Gly	Gly	Gly	Glu	Gln	Gly	Arg	Asp	Arg	Ser

Val Arg Leu Val Ser Gly Phe Leu Ala Leu Ala Trp Asp Asp Leu Arg
 740 745 750
 Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp Phe Ile Leu Ile
 755 760 765
 Ala Ala Arg Thr Val Glu Leu Leu Gly His Ser Ser Leu Lys Gly Leu
 770 775 780
 Arg Arg Gly Trp Glu Gly Leu Lys Tyr Leu Gly Asn Leu Leu Leu Tyr
 785 790 795 800
 Trp Gly Gln Glu Leu Lys Ile Ser Ala Ile Ser Leu Leu Asp Ala Thr
 805 810 815
 Ala Ile Ala Val Ala Gly Trp Thr Asp Arg Val Ile Glu Val Ala Gln
 820 825 830
 Gly Ala Trp Arg Ala Ile Leu His Ile Pro Arg Arg Ile Arg Gln Gly
 835 840 845
 Leu Glu Arg Ala Leu Leu
 850

<210> 48

<211> 638

<212> PRT

<213> Human immunodeficiency virus

<400> 48

Met Arg Val Lys Glu Thr Gln Met Asn Trp Pro Asn Leu Trp Lys Trp
 1 5 10 15
 Gly Thr Leu Ile Leu Gly Leu Val Ile Ile Cys Ser Ala Ser Asp Asn
 20 25 30
 Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Arg Asp Ala Asp
 35 40 45
 Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala His Glu Thr Glu Val
 50 55 60
 His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
 65 70 75 80
 Gln Glu Ile His Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
 85 90 95
 Asn Asn Met Val Glu Gln Met Gln Glu Asp Val Ile Ser Leu Trp Asp
 100 105 110
 Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
 115 120 125
 Asn Cys Thr Asn Ala Asn Leu Thr Asn Val Asn Asn Ile Thr Asn Val

130					135					140					
Ser	Asn	Ile	Ile	Gly	Asn	Ile	Thr	Asn	Glu	Val	Arg	Asn	Cys	Ser	Phe
145					150					155					160
Asn	Met	Thr	Thr	Glu	Leu	Arg	Asp	Lys	Lys	Gln	Lys	Val	His	Ala	Leu
				165					170					175	
Phe	Tyr	Lys	Leu	Asp	Ile	Val	Gln	Ile	Glu	Asp	Asn	Asn	Ser	Tyr	Arg
			180					185					190		
Leu	Ile	Asn	Cys	Asn	Thr	Ser	Val	Ile	Lys	Gln	Ala	Cys	Pro	Lys	Ile
		195					200					205			
Ser	Phe	Asp	Pro	Ile	Pro	Ile	His	Tyr	Cys	Thr	Pro	Ala	Gly	Tyr	Ala
	210					215					220				
Ile	Leu	Lys	Cys	Asn	Asp	Lys	Asn	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys
225				230					235						240
Asn	Val	Ser	Ser	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser
				245					250					255	
Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile
			260					265					270		
Arg	Ser	Glu	Asn	Leu	Thr	Asn	Asn	Ala	Lys	Thr	Ile	Ile	Val	His	Leu
		275					280					285			
Asn	Lys	Ser	Val	Glu	Ile	Asn	Cys	Thr	Arg	Pro	Ser	Asn	Asn	Thr	Arg
	290					295					300				
Thr	Ser	Ile	Thr	Ile	Gly	Pro	Gly	Gln	Val	Phe	Tyr	Arg	Thr	Gly	Asp
305				310						315					320
Ile	Ile	Gly	Asp	Ile	Arg	Lys	Ala	Tyr	Cys	Glu	Ile	Asn	Gly	Thr	Lys
			325						330				335		
Trp	Asn	Glu	Val	Leu	Lys	Gln	Val	Thr	Glu	Lys	Leu	Lys	Glu	His	Phe
			340					345					350		
Asn	Asn	Lys	Thr	Ile	Ile	Phe	Gln	Pro	Pro	Ser	Gly	Gly	Asp	Leu	Glu
		355					360					365			
Ile	Thr	Met	His	His	Phe	Asn	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	Cys	Asn
	370					375					380				
Thr	Thr	Lys	Leu	Phe	Asn	Asn	Thr	Cys	Ile	Gly	Asn	Glu	Thr	Met	Glu
385				390						395					400
Gly	Cys	Asn	Gly	Thr	Ile	Ile	Leu	Pro	Cys	Lys	Ile	Lys	Gln	Ile	Ile
			405					410					415		
Asn	Met	Trp	Gln	Gly	Ala	Gly	Gln	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Ser
			420				425					430			
Gly	Arg	Ile	Asn	Cys	Val	Ser	Asn	Ile	Thr	Gly	Ile	Leu	Leu	Thr	Arg

435	440	445
Asp Gly Gly Ala Asn Asn Thr Asn Glu Thr Phe Arg Pro Gly Gly Gly		
450	455	460
Asn Ile Lys Asp Asn Trp Arg Ser Glu Leu Tyr Lys Tyr Lys Val Val		
465	470	475 480
Gln Ile Glu Pro Leu Gly Ile Ala Pro Thr Arg Ala Lys Thr Leu Thr		
	485	490 495
Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Ser Asn		
	500	505 510
Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val		
	515	520 525
Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Val Glu Arg Tyr		
	530	535 540
Leu Lys Asp Gln Lys Phe Leu Gly Leu Trp Gly Cys Ser Gly Lys Ile		
545	550	555 560
Ile Cys Thr Thr Ala Val Pro Trp Asn Ser Thr Trp Ser Asn Arg Ser		
	565	570 575
Phe Glu Glu Ile Trp Asn Asn Met Thr Trp Ile Glu Trp Glu Arg Glu		
	580	585 590
Ile Ser Asn Tyr Thr Asn Gln Ile Tyr Glu Ile Leu Thr Glu Ser Gln		
	595	600 605
Asn Gln Gln Asp Arg Asn Glu Lys Asp Leu Leu Glu Leu Asp Lys Trp		
610	615	620
Ala Ser Leu Trp Asn Trp Phe Asp Ile Thr Asn Trp Leu Trp		
625	630	635

<210> 49

<211> 1945

<212> DNA

<213> Human immunodeficiency virus

<400> 49

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agtggggcac	cctgacccctg	ggtttggtca	ttatttgctc	tgcgagcgac	aatctctggg	120
ttactgtcta	ttacggagtc	cccgtttgga	gagatgccga	cactacactg	ttctgcgcct	180
cagatgccaa	agctcatgaa	actgaagtgc	ataatgtttg	ggcaaccac	gcctgtgttc	240
ctaccgaccc	aaacccccaa	gaaatacacc	tggaacacgt	gaccgagaac	tttaatatgt	300
ggaagaataa	catgggttgaa	cagatgcaag	aagacgtaat	cagcctgtgg	gatcaaagtc	360
tgaaaccttg	cgtaaaactg	actccacttt	gcgtaacact	taattgcacc	aacgcgaacc	420
tgacaaacgt	taacaacatc	actaacgtct	ccaacatcat	cggcaacata	acgaacgaag	480
tgagaaaattg	cagtttcaat	atgactacag	agctccggga	caagaaacag	aagggtccatg	540
ctctcttttta	caaactcgac	atcgctccaga	tcgaagacaa	taacagctac	agacttataa	600
attgtaatac	atccgtgatt	aaacaagcat	gccccaaaat	aagcttcgat	cctattccta	660
tccactactg	tactcctgcc	ggctatgcta	tcttgaaatg	caatgataag	aacttcaatg	720

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ggaccggacc ttgtaagaac gtgtctagtg tgcaatgcac tcacggcatt aaaccagtgg 780
taagcaccaca gctgctcctg aacggctctc tggcagagga agagattatt attcgaagtg 840
agaacctcac caacaacgct aagactatca tcgtacatct caataaatca gtcgaaatta 900
attgcaccag accctccaat aatactagaa cttcaatcac tatcggccca ggacaagtct 960
tttatagaac aggagatatc ataggagata tcagaaaggc atattgagag ataaacggga 1020
caaaatggaa cgaagtactc aaacaagtca cagagaagct taaggaacat ttcaacaata 1080
aaaccattat ttttcaaccc ccaagtggcg gagacctcga aatcactatg caccattca 1140
actgccgcgg cgaatttttt tattgcaata ccactaaact tttcaacaat acgtgcatcg 1200
gaaatgagac catggagggc tgcaatggaa caatcatact cccatgcaag ataaaacaaa 1260
tcattaacat gtggcaaggt gctggacaag ctatgtatgc accccaata tccggtagaa 1320
ttaattgctg cagcaacatc actggcatac tgctcactag agacggagga gcaaataata 1380
caaatgaaac attccgacca ggcgggcgga acattaagga caactggcg tccgaactct 1440
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tcacagtaca ggcccagaca cttctttctg gaatcgtagc gcagcaatcc aacctcctcc 1560
gcgcaatcga ggcccacaaa catctgcttc agctcacagt ttggggaatc aagcagctcc 1620
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gatgttctgg caaaataatc tgcactaccg cggttccttg gaattcaaca tggagcaacc 1740
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actatacgaa ccagatatac gaaatcctca ccgaaagcca aaatcagcag gatcgcaacg 1860
aaaaagacct cctcgagctt gataagtggg catccctttg gaactggttc gacatcacia 1920
attggctctg gtaaagatct tacaa 1945

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<210> 50

<211> 863

<212> PRT

<213> Human immunodeficiency virus

<400> 50

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Met Gly Ala Met Gly Ile Gln Met Asn Trp Gln Asn Leu Trp Arg Trp
  1             5             10             15

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Gly Thr Met Ile Leu Gly Met Leu Ile Ile Cys Ser Val Ala Glu Lys
      20             25             30

```

```

Ser Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Arg Asp Ala Glu
      35             40             45

```

```

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala His Asp Lys Glu Val
      50             55             60

```

```

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
      65             70             75             80

```

```

Gln Glu Met Ile Leu Glu Asn Val Thr Glu Asp Phe Asn Met Trp Lys
      85             90             95

```

```

Asn Ser Met Val Glu Gln Met His Thr Asp Ile Ile Ser Leu Trp Asp
      100            105            110

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```

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
      115            120            125

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Asn Cys Ser Asp Ser Asn Ile Thr Ser Asn Ser Thr Ser Asn Ser Thr
      130            135            140

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Lys Asp Ser Ala Thr Leu Asp Met Lys Ser Glu Ile Gln Asn Cys Ser

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145		150		155		160
Phe Asn Met Thr Thr Glu Leu Arg Asp Lys Lys Gln Lys Val Tyr Ser						
		165		170		175
Leu Phe Tyr Arg Leu Asp Val Val Gln Ile Asn Glu Asn Ser Ser Asp						
		180		185		190
Tyr Arg Leu Ile Asn Cys Asn Thr Ser Ala Ile Thr Gln Ala Cys Pro						
		195		200		205
Lys Val Thr Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly						
		210		215		220
Phe Ala Ile Leu Lys Cys Asn Asp Lys Lys Phe Asn Gly Thr Gly Pro						
		225		230		235
Cys Thr Asn Val Ser Thr Val Gln Cys Thr His Gly Ile Lys Pro Val						
		245		250		255
Val Thr Thr Gln Leu Leu Leu Asn Gly Ser Leu Ala Glu Glu Glu Val						
		260		265		270
Met Ile Arg Ser Glu Asn Ile Thr Glu Asn Ala Lys Asn Ile Ile Val						
		275		280		285
Gln Phe Lys Glu Pro Val Gln Ile Ile Cys Ile Arg Pro Gly Asn Asn						
		290		295		300
Thr Arg Lys Ser Val His Ile Gly Pro Gly Gln Ala Phe Tyr Ala Thr						
		305		310		315
Gly Asp Ile Ile Gly Asp Ile Arg Gln Ala His Cys Asn Val Ser Arg						
		325		330		335
Glu Leu Trp Asn Lys Thr Leu Gln Glu Val Ala Thr Gln Leu Arg Lys						
		340		345		350
His Phe Arg Asn Asn Thr Lys Ile Ile Phe Thr Asn Ser Ser Gly Gly						
		355		360		365
Asp Val Glu Ile Thr Thr His Ser Phe Asn Cys Gly Gly Glu Phe Phe						
		370		375		380
Tyr Cys Asp Thr Ser Gly Leu Phe Asn Ser Ser Trp Thr Ala Ser Asn						
		385		390		395
Asp Ser Met Gln Glu Ala His Ser Thr Glu Ser Asn Ile Thr Leu Gln						
		405		410		415
Cys Arg Ile Lys Gln Ile Ile Asn Met Trp Gln Arg Ala Gly Gln Ala						
		420		425		430
Met Tyr Ala Pro Pro Ile Pro Gly Ile Ile Arg Cys Glu Ser Asn Ile						
		435		440		445
Thr Gly Leu Ile Leu Thr Arg Asp Gly Gly Glu Gly Asn Asn Ser Thr						

450					455					460					
Asn	Glu	Thr	Phe	Arg	Pro	Val	Gly	Gly	Asn	Met	Arg	Asp	Asn	Trp	Arg
465					470					475					480
Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Val	Glu	Pro	Leu	Gly	Val
				485					490					495	
Ala	Pro	Thr	Lys	Ser	Arg	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala
			500					505					510		
Val	Gly	Leu	Gly	Ala	Val	Phe	Ile	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser
		515					520					525			
Thr	Met	Gly	Ala	Ala	Ser	Met	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu
	530					535					540				
Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu
545					550					555					560
Ala	Gln	Gln	His	Leu	Leu	Lys	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu
			565						570					575	
Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Arg	Asp	Gln	Gln	Leu
			580					585					590		
Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Asn	Val
	595						600					605			
Pro	Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Leu	Asp	Glu	Ile	Trp	Glu
	610					615					620				
Asn	Met	Thr	Trp	Met	Gln	Trp	Asp	Lys	Glu	Val	Ser	Asn	Tyr	Thr	Gln
625					630					635					640
Met	Ile	Tyr	Asn	Leu	Leu	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn
			645						650					655	
Glu	Gln	Glu	Leu	Leu	Ala	Leu	Asp	Lys	Trp	Ala	Asn	Leu	Trp	Asn	Trp
			660					665					670		
Phe	Asn	Ile	Ser	Asn	Trp	Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile
	675					680					685				
Val	Gly	Gly	Leu	Ile	Gly	Leu	Arg	Ile	Val	Phe	Ala	Val	Leu	Ser	Val
	690					695					700				
Ile	Asn	Arg	Val	Arg	Gln	Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Thr	His
705					710					715					720
Thr	Pro	Asn	Pro	Arg	Gly	Leu	Asp	Arg	Pro	Gly	Arg	Ile	Glu	Glu	Glu
			725						730				735		
Gly	Gly	Glu	Gln	Asp	Arg	Asp	Arg	Ser	Ile	Arg	Leu	Val	Ser	Gly	Phe
			740					745					750		
Leu	Ala	Leu	Ala	Trp	Asp	Asp	Leu	Arg	Ser	Leu	Cys	Leu	Phe	Ser	Tyr

755					760					765									
His	Arg	Leu	Arg	Asp	Phe	Ile	Leu	Ile	Ala	Ala	Arg	Thr	Leu	Glu	Leu				
770					775					780									
Leu	Gly	His	Asn	Ser	Leu	Lys	Gly	Leu	Arg	Leu	Gly	Trp	Glu	Gly	Leu				
785					790					795					800				
Lys	Tyr	Leu	Trp	Asn	Leu	Leu	Ala	Tyr	Trp	Gly	Arg	Glu	Leu	Lys	Ile				
805					810					815									
Ser	Ala	Ile	Ser	Leu	Val	Asp	Ser	Ile	Ala	Ile	Ala	Val	Ala	Gly	Trp				
820					825					830									
Thr	Asp	Arg	Ile	Ile	Glu	Ile	Val	Gln	Ala	Ile	Gly	Arg	Ala	Ile	Leu				
835					840					845									
His	Ile	Pro	Arg	Arg	Ile	Arg	Gln	Gly	Leu	Glu	Arg	Ala	Leu	Ile					
850					855					860									

<210> 51
 <211> 647
 <212> PRT
 <213> Human immunodeficiency virus

<400> 51															
Met	Gly	Ala	Met	Gly	Ile	Gln	Met	Asn	Trp	Gln	Asn	Leu	Trp	Arg	Trp
1		5				10						15			
Gly	Thr	Met	Ile	Leu	Gly	Met	Leu	Ile	Ile	Cys	Ser	Val	Ala	Glu	Lys
20				25				30							
Ser	Trp	Val	Thr	Val	Tyr	Tyr	Gly	Val	Pro	Val	Trp	Arg	Asp	Ala	Glu
35				40				45							
Thr	Thr	Leu	Phe	Cys	Ala	Ser	Asp	Ala	Lys	Ala	His	Asp	Lys	Glu	Val
50				55				60							
His	Asn	Val	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro
65				70				75						80	
Gln	Glu	Met	Ile	Leu	Glu	Asn	Val	Thr	Glu	Asp	Phe	Asn	Met	Trp	Lys
85				90				95							
Asn	Ser	Met	Val	Glu	Gln	Met	His	Thr	Asp	Ile	Ile	Ser	Leu	Trp	Asp
100				105				110							
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu
115				120				125							
Asn	Cys	Ser	Asp	Ser	Asn	Ile	Thr	Ser	Asn	Ser	Thr	Ser	Asn	Ser	Thr
130				135				140							
Lys	Asp	Ser	Ala	Thr	Leu	Asp	Met	Lys	Ser	Glu	Ile	Gln	Asn	Cys	Ser
145				150				155				160			

Phe	Asn	Met	Thr	Thr	Glu	Leu	Arg	Asp	Lys	Lys	Gln	Lys	Val	Tyr	Ser		
				165					170					175			
Leu	Phe	Tyr	Arg	Leu	Asp	Val	Val	Gln	Ile	Asn	Glu	Asn	Ser	Ser	Asp		
			180					185					190				
Tyr	Arg	Leu	Ile	Asn	Cys	Asn	Thr	Ser	Ala	Ile	Thr	Gln	Ala	Cys	Pro		
		195					200					205					
Lys	Val	Thr	Phe	Glu	Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly		
	210					215					220						
Phe	Ala	Ile	Leu	Lys	Cys	Asn	Asp	Lys	Lys	Phe	Asn	Gly	Thr	Gly	Pro		
225					230					235					240		
Cys	Thr	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val		
			245						250					255			
Val	Thr	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Val		
			260					265					270				
Met	Ile	Arg	Ser	Glu	Asn	Ile	Thr	Glu	Asn	Ala	Lys	Asn	Ile	Ile	Val		
		275					280					285					
Gln	Phe	Lys	Glu	Pro	Val	Gln	Ile	Ile	Cys	Ile	Arg	Pro	Gly	Asn	Asn		
	290					295					300						
Thr	Arg	Lys	Ser	Val	His	Ile	Gly	Pro	Gly	Gln	Ala	Phe	Tyr	Ala	Thr		
305					310					315					320		
Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	Cys	Asn	Val	Ser	Arg		
			325					330						335			
Glu	Leu	Trp	Asn	Lys	Thr	Leu	Gln	Glu	Val	Ala	Thr	Gln	Leu	Arg	Lys		
			340					345					350				
His	Phe	Arg	Asn	Asn	Thr	Lys	Ile	Ile	Phe	Thr	Asn	Ser	Ser	Gly	Gly		
		355					360					365					
Asp	Val	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Gly	Gly	Glu	Phe	Phe		
	370					375					380						
Tyr	Cys	Asp	Thr	Ser	Gly	Leu	Phe	Asn	Ser	Ser	Trp	Thr	Ala	Ser	Asn		
385					390					395					400		
Asp	Ser	Met	Gln	Glu	Ala	His	Ser	Thr	Glu	Ser	Asn	Ile	Thr	Leu	Gln		
			405						410					415			
Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Arg	Ala	Gly	Gln	Ala		
			420					425					430				
Met	Tyr	Ala	Pro	Pro	Ile	Pro	Gly	Ile	Ile	Arg	Cys	Glu	Ser	Asn	Ile		
		435					440					445					
Thr	Gly	Leu	Ile	Leu	Thr	Arg	Asp	Gly	Gly	Glu	Gly	Asn	Asn	Ser	Thr		
	450					455					460						

Asn	Glu	Thr	Phe	Arg	Pro	Val	Gly	Gly	Asn	Met	Arg	Asp	Asn	Trp	Arg
465					470				475						480
Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Val	Glu	Pro	Leu	Gly	Val
				485					490					495	
Ala	Pro	Thr	Lys	Ser	Arg	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu
			500					505					510		
Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala
		515					520					525			
Gln	Gln	His	Leu	Leu	Lys	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln
	530					535					540				
Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Arg	Asp	Gln	Gln	Leu	Leu
545					550					555					560
Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro
				565					570					575	
Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Leu	Asp	Glu	Ile	Trp	Glu	Asn
			580					585					590		
Met	Thr	Trp	Met	Gln	Trp	Asp	Lys	Glu	Val	Ser	Asn	Tyr	Thr	Gln	Met
		595					600					605			
Ile	Tyr	Asn	Leu	Leu	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu
	610					615					620				
Gln	Glu	Leu	Leu	Ala	Leu	Asp	Lys	Trp	Ala	Asn	Leu	Trp	Asn	Trp	Phe
625					630					635					640
Asn	Ile	Ser	Asn	Trp	Leu	Trp									
					645										

<210> 52

<211> 1972

<212> DNA

<213> Human immunodeficiency virus

<400> 52

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caaccgatcc	taaccacaaa	gaaatgatac	tcgaaaacgt	tactgaagac	ttcaacatgt	300
ggaaaaattc	tatggttgaa	cagatgcaca	ccgacataat	atcactgtgg	gatcagtctc	360
tcaaaccctg	tgtcaaattg	acccccctct	gcgttacact	gaactgttcc	gactcaaata	420
tcacttctaa	ttcaacgagc	aatagtacga	aagactccgc	aacccttgat	atgaaaagcg	480
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tcattaactg	caatacatca	gcaatcacac	aggcttgccc	aaaggtaaca	tttgagccaa	660
tccctattca	ctactgcgcc	cctgcaggat	ttgccatcct	gaaatgcaac	gataagaagt	720
ttaatgggac	aggaccctgc	accaacgtct	ccaccgtgca	atgcaccac	ggcataaaac	780
ctgttggttac	cacacaattg	ctgctcaatg	gatcacttgc	tgaagaggaa	gtcatgattc	840

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aggctttcta tgcaaccgga gatattatag gcgacatcag acaggcacat tgcaacgtca 1020
gccgggaatt gtggaacaaa actttgcagg aagttgctac tcagctgcga aaacatttca 1080
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cacctcccat ccccggaatt attcgatgtg agtctaatat cactggcctc attctgacct 1380
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aatctcagaa tcaacaggaa aaaaacgaac aagaactgct cgccctcgat aagtgggcta 1920
acctctggaa ctggtttaat atttcaaact ggttgtggta aagatcttac aa 1972

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<210> 53
<211> 861
<212> PRT
<213> Human immunodeficiency virus

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<400> 53
Met Arg Val Lys Glu Ile Arg Arg Asn Cys Gln Arg Leu Arg Arg Trp
 1           5           10          15

Gly Thr Met Leu Leu Gly Met Leu Met Ile Cys Ser Ala Thr Glu Gln
      20           25           30

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Thr
      35           40           45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Val Thr Glu Lys
      50           55           60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
      65           70           75           80

Gln Glu Val Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
      85           90           95

Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Glu
      100          105          110

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
      115          120          125

Asn Cys Thr Asp Lys Leu Arg Asn Asp Thr Ser Gly Thr Asn Ser Ser
      130          135          140

Ser Trp Glu Lys Val Gln Lys Gly Glu Ile Lys Asn Cys Ser Phe Asn
      145          150          155          160

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Ile	Thr	Thr	Gly	Ile	Arg	Gly	Arg	Val	Gln	Glu	Tyr	Ser	Leu	Phe	Tyr	165	170	175
Lys	Leu	Asp	Val	Ile	Pro	Ile	Asp	Ser	Arg	Asn	Asn	Ser	Asn	Asn	Ser	180	185	190
Thr	Glu	Phe	Ser	Ser	Tyr	Arg	Leu	Ile	Ser	Cys	Asn	Thr	Ser	Val	Ile	195	200	205
Thr	Gln	Ala	Cys	Pro	Lys	Ile	Ser	Phe	Glu	Pro	Ile	Pro	Ile	His	Tyr	210	215	220
Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Asn	Asp	Lys	Lys	Phe	225	230	235
Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His	245	250	255
Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	260	265	270
Ala	Glu	Glu	Glu	Val	Val	Ile	Arg	Ser	Glu	Asn	Phe	Thr	Asn	Asn	Val	275	280	285
Lys	Ser	Ile	Ile	Val	Gln	Leu	Asn	Lys	Ser	Val	Val	Ile	Asn	Cys	Thr	290	295	300
Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	His	Ile	Gly	Ala	Gly	Lys	305	310	315
Ala	Leu	Tyr	Thr	Gly	Glu	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	Cys	325	330	335
Asn	Leu	Ser	Arg	Ala	Gln	Trp	Asn	Asn	Thr	Leu	Lys	Gln	Ile	Val	Ile	340	345	350
Lys	Leu	Arg	Glu	Gln	Phe	Gly	Asn	Lys	Thr	Ile	Val	Phe	Asn	Gln	Ser	355	360	365
Ser	Gly	Gly	Asp	Val	Glu	Ile	Val	Met	His	Ser	Phe	Asn	Cys	Gly	Gly	370	375	380
Glu	Phe	Phe	Tyr	Cys	Asn	Ser	Thr	Gln	Leu	Phe	Asn	Ser	Thr	Trp	Asn	385	390	395
Gly	Asn	Asp	Thr	Trp	Asn	Asp	Thr	Trp	Lys	Asp	Thr	Thr	Asn	Asp	Asn	405	410	415
Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Val	Asn	Met	Trp	Gln	Lys	420	425	430
Val	Gly	Lys	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Arg	Gly	Gln	Ile	Arg	Cys	435	440	445
Ser	Ser	Lys	Ile	Thr	Gly	Leu	Ile	Leu	Thr	Arg	Asp	Gly	Gly	Thr	Asn	450	455	460

Gly	Thr	Asn	Glu	Thr	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asn	Met	Lys	465	470	475	480
Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	Glu	485	490		495
Pro	Leu	Gly	Ile	Ala	Pro	Thr	Lys	Ala	Lys	Arg	Arg	Val	Val	Gln	Arg	500	505		510
Glu	Lys	Arg	Ala	Val	Gly	Thr	Ile	Gly	Ala	Met	Phe	Leu	Gly	Phe	Leu	515	520		525
Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Leu	Thr	Leu	Thr	Val	530	535		540
Gln	Ala	Arg	Leu	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Asn	Asn	Leu	545	550		555
Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr	Val	Trp	565	570		575
Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	580	585		590
Arg	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Arg	Leu	Ile	595	600		605
Cys	Thr	Thr	Asn	Val	Pro	Trp	Asn	Thr	Ser	Trp	Ser	Asn	Arg	Ser	Leu	610	615		620
Asn	Tyr	Ile	Trp	Asp	Asn	Met	Thr	Trp	Met	Gln	Trp	Asp	Arg	Glu	Ile	625	630		635
Asn	Asn	Tyr	Thr	Asp	Tyr	Ile	Tyr	Thr	Leu	Leu	Glu	Asp	Ala	Gln	Asn	645	650		655
Gln	Gln	Glu	Lys	Asn	Glu	Gln	Glu	Leu	Leu	Glu	Leu	Asp	Lys	Trp	Ala	660	665		670
Ser	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Asn	Trp	Leu	Trp	Tyr	Ile	Lys	675	680		685
Ile	Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile	Gly	Leu	Arg	Ile	Val	Phe	690	695		700
Ala	Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg	Gln	Gly	Tyr	Ser	Pro	Leu	705	710		715
Ser	Leu	Gln	Thr	His	Leu	Pro	Ala	Arg	Arg	Gly	Pro	Asp	Arg	Pro	Glu	725	730		735
Gly	Ile	Gly	Glu	Glu	Gly	Gly	Glu	Arg	Asp	Arg	Asp	Arg	Ser	Val	Arg	740	745		750
Leu	Val	His	Gly	Phe	Leu	Ala	Leu	Val	Trp	Glu	Asp	Leu	Arg	Ser	Leu	755	760		765

Cys Leu Phe Ser Tyr His Arg Leu Arg Asp Leu Leu Leu Ile Val Ala
 770 775 780
 Arg Thr Val Glu Ile Leu Gly Gln Arg Gly Trp Glu Ala Leu Lys Tyr
 785 790 795 800
 Trp Trp Asn Leu Leu Leu Tyr Trp Ser Leu Glu Leu Lys Asn Ser Ala
 805 810 815
 Val Ser Leu Val Asp Thr Ile Ala Ile Ala Val Ala Glu Gly Thr Asp
 820 825 830
 Arg Ile Ile Glu Ile Ala Arg Arg Ile Phe Arg Ala Phe Leu His Ile
 835 840 845
 Pro Thr Arg Ile Arg Gln Gly Leu Glu Arg Ala Leu Leu
 850 855 860

<210> 54
 <211> 651
 <212> PRT
 <213> Human immunodeficiency virus

<400> 54
 Met Arg Val Lys Glu Ile Arg Arg Asn Cys Gln Arg Leu Arg Arg Trp
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 Gly Thr Met Leu Leu Gly Met Leu Met Ile Cys Ser Ala Thr Glu Gln
 20 25 30
 Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Thr
 35 40 45
 Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Val Thr Glu Lys
 50 55 60
 His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
 65 70 75 80
 Gln Glu Val Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
 85 90 95
 Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Glu
 100 105 110
 Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
 115 120 125
 Asn Cys Thr Asp Lys Leu Arg Asn Asp Thr Ser Gly Thr Asn Ser Ser
 130 135 140
 Ser Trp Glu Lys Val Gln Lys Gly Glu Ile Lys Asn Cys Ser Phe Asn
 145 150 155 160
 Ile Thr Thr Gly Ile Arg Gly Arg Val Gln Glu Tyr Ser Leu Phe Tyr
 165 170 175

Lys	Leu	Asp	Val	Ile	Pro	Ile	Asp	Ser	Arg	Asn	Asn	Ser	Asn	Asn	Ser		
			180					185					190				
Thr	Glu	Phe	Ser	Ser	Tyr	Arg	Leu	Ile	Ser	Cys	Asn	Thr	Ser	Val	Ile		
		195					200					205					
Thr	Gln	Ala	Cys	Pro	Lys	Ile	Ser	Phe	Glu	Pro	Ile	Pro	Ile	His	Tyr		
	210					215					220						
Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Asn	Asp	Lys	Lys	Phe		
225					230					235					240		
Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His		
				245					250					255			
Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu		
			260					265					270				
Ala	Glu	Glu	Glu	Val	Val	Ile	Arg	Ser	Glu	Asn	Phe	Thr	Asn	Asn	Val		
		275					280					285					
Lys	Ser	Ile	Ile	Val	Gln	Leu	Asn	Lys	Ser	Val	Val	Ile	Asn	Cys	Thr		
	290					295					300						
Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	His	Ile	Gly	Ala	Gly	Lys		
305					310					315					320		
Ala	Leu	Tyr	Thr	Gly	Glu	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	Cys		
				325					330					335			
Asn	Leu	Ser	Arg	Ala	Gln	Trp	Asn	Asn	Thr	Leu	Lys	Gln	Ile	Val	Ile		
			340					345					350				
Lys	Leu	Arg	Glu	Gln	Phe	Gly	Asn	Lys	Thr	Ile	Val	Phe	Asn	Gln	Ser		
		355					360					365					
Ser	Gly	Gly	Asp	Val	Glu	Ile	Val	Met	His	Ser	Phe	Asn	Cys	Gly	Gly		
	370					375					380						
Glu	Phe	Phe	Tyr	Cys	Asn	Ser	Thr	Gln	Leu	Phe	Asn	Ser	Thr	Trp	Asn		
385					390					395					400		
Gly	Asn	Asp	Thr	Trp	Asn	Asp	Thr	Trp	Lys	Asp	Thr	Thr	Asn	Asp	Asn		
				405					410					415			
Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Val	Asn	Met	Trp	Gln	Lys		
			420					425					430				
Val	Gly	Lys	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Arg	Gly	Gln	Ile	Arg	Cys		
		435					440					445					
Ser	Ser	Lys	Ile	Thr	Gly	Leu	Ile	Leu	Thr	Arg	Asp	Gly	Gly	Thr	Asn		
	450					455					460						
Gly	Thr	Asn	Glu	Thr	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asn	Met	Lys		
465					470					475					480		

Asp Asn Trp Arg Ser Glu Leu Tyr Lys Tyr Lys Val Val Lys Ile Glu
 485 490 495
 Pro Leu Gly Ile Ala Pro Thr Lys Ala Lys Thr Leu Thr Val Gln Ala
 500 505 510
 Arg Leu Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu Leu Arg
 515 520 525
 Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile
 530 535 540
 Lys Gln Leu Gln Ala Arg Val Leu Ala Val Glu Arg Tyr Leu Arg Asp
 545 550 555 560
 Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly Arg Leu Ile Cys Thr
 565 570 575
 Thr Asn Val Pro Trp Asn Thr Ser Trp Ser Asn Arg Ser Leu Asn Tyr
 580 585 590
 Ile Trp Asp Asn Met Thr Trp Met Gln Trp Asp Arg Glu Ile Asn Asn
 595 600 605
 Tyr Thr Asp Tyr Ile Tyr Thr Leu Leu Glu Asp Ala Gln Asn Gln Gln
 610 615 620
 Glu Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu
 625 630 635 640
 Trp Asn Trp Phe Asp Ile Thr Asn Trp Leu Trp
 645 650

<210> 55
 <211> 1984
 <212> DNA
 <213> Human immunodeficiency virus

<400> 55
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 taaccgtgta ctatggtgta cctgtatgga aagaagccac tacaaccctg ttttgcgctg 180
 ccgacgcaaa agcctacgta acagaaaagc acaacgtgtg ggccacacat gcatgcgtgc 240
 caacagatcc aaatcctcag gaagtcgttc tggaaaatgt aacagaaaat tttaatatgt 300
 ggaaaaacaa tatggtagag cagatgcatg aagatatcat ctactgtgg gaacaatcct 360
 tgaaaccttg tgtcaaaactg accccacttt gcgtaacact taactgtact gataagcttc 420
 gcaatgatac gtccggaaca aattcaagca gctgggaaaa agtgcaaaag ggcgaaatca 480
 aaaattgttc atttaacatc actaccggtg tcagagggcg ggtacaggaa tattctcttt 540
 tctacaaact cgacgtcatc ccaatcgact ccagaaataa ctcaaataat agcacagaat 600
 ttagtagtta tcgccttata agctgcaaca ccagcgtgat tacacaagcg tgccctaaaa 660
 tctcttttga gccattcct attcactact gcgcaccagc cggcttcgcc atcctcaaat 720
 gtaacgacaa gaaatttaac ggaaccggac cctgtaagaa tgtgtccacc gttcaatgca 780
 ctcattggaat caagcccgtc gtttctaccc aacttcttct caatggtagc cttgcggagg 840
 aggaagtgtg gattcgctcc gaaaatttta caaacaacgt caagtcaatc atcgtccagc 900
 ttaataaatc cgtcgttatt aattgtacaa gacccaacaa taacaccaga aaatccattc 960

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acataggggc cgggaaagct ctgtataccg gggaaattat tggagacatc agacaagcac 1020
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ttaacagcac ctggaacggc aatgacacat ggaatgacac ctggaaagat acgacaaatg 1260
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acttgctgca gttgacagtg tggggaatta aacagttgca ggcccgggtt ctcgctgtcg 1680
aacggtatct tagagatcag cagcttttgg gtatctgggg gtgttcaggc cgcctcatat 1740
gcaccacaaa tgtcccttgg aatacctcat ggagtaacag gtctcttaat tatatttggg 1800
acaatatgac atggatgcaa tgggatagag aaattaataa ctacaccgac tacatctaca 1860
cacttctgga ggacgcccag aatcagcagg agaagaacga gcaggaactc ctcgaattgg 1920
ataagtgggc atcactgtgg aattggttcg atataactaa ttggctttgg taaagatctt 1980
acaa
1984

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<210> 56
 <211> 854
 <212> PRT
 <213> Human immunodeficiency virus

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<400> 56
Met Arg Val Lys Gly Ile Gln Arg Asn Trp Pro Gln Trp Trp Ile Trp
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Gly Ile Leu Gly Phe Trp Met Ile Ile Ile Cys Arg Val Val Gly Asn
  20             25             30

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Thr Glu Ala Lys
  35             40             45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Arg Glu Val
  50             55             60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
  65             70             75             80

Gln Glu Ile Val Leu Gly Asn Val Thr Glu Asn Phe Asn Met Trp Lys
  85             90             95

Asn Asp Met Val Asp Gln Met His Glu Asp Ile Ile Ser Ile Trp Asp
 100             105             110

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
 115             120             125

Asn Cys Thr Asp Val Lys Val Asn Ala Thr Ser Asn Gly Thr Thr Thr
 130             135             140

Tyr Asn Asn Ser Ile Asp Ser Met Asn Gly Glu Ile Lys Asn Cys Ser
 145             150             155             160

Phe Asn Ile Thr Thr Glu Ile Arg Asp Lys Lys Gln Lys Val Tyr Ala

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165								170				175				
Leu	Phe	Tyr	Arg	Pro	Asp	Val	Val	Pro	Leu	Asn	Glu	Asn	Ser	Ser	Ser	
			180					185					190			
Tyr	Ile	Leu	Ile	Asn	Cys	Asn	Thr	Ser	Thr	Thr	Thr	Gln	Ala	Cys	Pro	
		195					200					205				
Lys	Val	Ser	Phe	Asp	Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	
	210					215					220					
Tyr	Ala	Ile	Leu	Lys	Cys	Asn	Asn	Lys	Thr	Phe	Asn	Gly	Thr	Gly	Pro	
225					230					235					240	
Cys	His	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	
				245					250					255		
Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	
			260					265					270			
Ile	Ile	Arg	Ser	Glu	Asn	Leu	Thr	Asn	Asn	Ala	Lys	Thr	Ile	Ile	Val	
		275					280					285				
His	Leu	Asn	Glu	Ser	Ile	Glu	Ile	Val	Cys	Thr	Arg	Pro	Asn	Asn	Asn	
	290					295					300					
Thr	Arg	Lys	Ser	Ile	Arg	Ile	Gly	Pro	Gly	Gln	Thr	Val	Tyr	Ala	Thr	
305					310					315					320	
Asn	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	Cys	Asn	Ile	Ser	Lys	
				325					330					335		
Thr	Lys	Trp	Asn	Thr	Thr	Leu	Glu	Lys	Val	Lys	Glu	Lys	Leu	Lys	Glu	
			340					345					350			
His	Phe	Pro	Ser	Lys	Ala	Ile	Thr	Phe	Gln	Pro	His	Ser	Gly	Gly	Asp	
		355					360					365				
Leu	Glu	Val	Thr	Thr	His	Ser	Phe	Asn	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	
	370					375				380						
Cys	Asp	Thr	Thr	Lys	Leu	Phe	Asn	Glu	Ser	Asn	Leu	Asn	Thr	Thr	Asn	
385					390				395						400	
Thr	Thr	Thr	Leu	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Val	Asn	Met	
			405					410						415		
Trp	Gln	Gly	Val	Gly	Arg	Ala	Met	Tyr	Ala	Pro	Pro	Val	Glu	Gly	Asn	
			420					425					430			
Ile	Thr	Cys	Asn	Ser	Ser	Ile	Thr	Gly	Leu	Leu	Leu	Val	Arg	Asp	Gly	
		435					440					445				
Gly	Asn	Thr	Ser	Asn	Ser	Thr	Pro	Glu	Ile	Phe	Arg	Pro	Gly	Gly	Gly	
	450					455				460						
Asn	Met	Lys	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	

465		470		475		480
Glu Ile Lys Pro	Leu Gly Val Ala Pro	Thr Lys Ala Lys Arg Arg Val				
	485	490	495			
Val Glu Arg Glu	Lys Arg Ala Val Gly	Ile Gly Ala Val Leu Phe Gly				
	500	505	510			
Phe Leu Gly Ala	Ala Gly Ser Thr Met Gly	Ala Ala Ser Ile Thr Leu				
	515	520	525			
Thr Val Gln Ala	Arg Gln Leu Leu Ser Gly	Ile Val Gln Gln Gln Ser				
	530	535	540			
Asn Leu Leu Arg	Ala Ile Glu Ala Gln Gln	His Met Leu Gln Leu Thr				
	545	550	555			560
Val Trp Gly Ile	Lys Gln Leu Gln Ala Arg	Val Leu Ala Ile Glu Arg				
	565	570	575			
Tyr Leu Lys Asp	Gln Gln Leu Leu Gly	Leu Trp Gly Cys Ser Gly Lys				
	580	585	590			
Leu Ile Cys Pro	Thr Thr Val Pro Trp	Asn Ser Ser Trp Ser Asn Lys				
	595	600	605			
Ser Gln Thr Asp	Ile Trp Asp Asn Met Thr	Trp Met Gln Trp Asp Arg				
	610	615	620			
Glu Ile Ser Asn	Tyr Thr Gly Thr Ile Tyr	Lys Leu Leu Glu Glu Ser				
	625	630	635			640
Gln Asn Gln Gln	Glu Lys Asn Glu Lys Asp	Leu Leu Ala Leu Asp Ser				
	645	650	655			
Trp Lys Asn Leu	Trp Ser Trp Phe Asp	Ile Thr Asn Trp Leu Trp Tyr				
	660	665	670			
Ile Lys Ile Phe	Ile Met Ile Val Gly Gly	Leu Ile Gly Leu Arg Ile				
	675	680	685			
Ile Phe Gly Val	Leu Ser Ile Val Lys Arg	Val Arg Gln Gly Tyr Ser				
	690	695	700			
Pro Leu Ser Phe	Gln Thr Leu Thr Pro Asn	Pro Arg Gly Leu Asp Arg				
	705	710	715			720
Leu Gly Arg Ile	Glu Glu Glu Gly Gly	Glu Gln Asp Lys Asp Arg Ser				
	725	730	735			
Ile Arg Leu Val	Asn Gly Phe Leu Ala	Leu Ala Trp Asp Asp Leu Arg				
	740	745	750			
Ser Leu Cys Leu	Phe Ser Tyr His Arg	Leu Arg Asp Phe Ile Leu Val				
	755	760	765			
Ala Ala Arg Ala	Val Glu Leu Leu Gly	Arg Ser Ser Leu Arg Gly Leu				

770

775

780

Gln Arg Gly Trp Glu Ala Leu Lys Tyr Leu Gly Asn Leu Val Gln Tyr
 785 790 795 800

Gly Gly Leu Glu Leu Lys Arg Arg Ala Ile Ser Leu Phe Asp Thr Ile
 805 810 815

Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Ile Leu Glu Val Ile Leu
 820 825 830

Arg Ile Ile Arg Ala Ile Arg Asn Ile Pro Thr Arg Ile Arg Gln Gly
 835 840 845

Phe Glu Ala Ala Leu Leu
 850

<210> 57

<211> 638

<212> PRT

<213> Human immunodeficiency virus

<400> 57

Met Arg Val Lys Gly Ile Gln Arg Asn Trp Pro Gln Trp Trp Ile Trp
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Gly Ile Leu Gly Phe Trp Met Ile Ile Ile Cys Arg Val Val Gly Asn
 20 25 30

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Thr Glu Ala Lys
 35 40 45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Arg Glu Val
 50 55 60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
 65 70 75 80

Gln Glu Ile Val Leu Gly Asn Val Thr Glu Asn Phe Asn Met Trp Lys
 85 90 95

Asn Asp Met Val Asp Gln Met His Glu Asp Ile Ile Ser Ile Trp Asp
 100 105 110

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
 115 120 125

Asn Cys Thr Asp Val Lys Val Asn Ala Thr Ser Asn Gly Thr Thr Thr
 130 135 140

Tyr Asn Asn Ser Ile Asp Ser Met Asn Gly Glu Ile Lys Asn Cys Ser
 145 150 155 160

Phe Asn Ile Thr Thr Glu Ile Arg Asp Lys Lys Gln Lys Val Tyr Ala
 165 170 175

Leu	Phe	Tyr	Arg	Pro	Asp	Val	Val	Pro	Leu	Asn	Glu	Asn	Ser	Ser	Ser	180	185	190	
Tyr	Ile	Leu	Ile	Asn	Cys	Asn	Thr	Ser	Thr	Thr	Thr	Gln	Ala	Cys	Pro	195	200	205	
Lys	Val	Ser	Phe	Asp	Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	210	215	220	
Tyr	Ala	Ile	Leu	Lys	Cys	Asn	Asn	Lys	Thr	Phe	Asn	Gly	Thr	Gly	Pro	225	230	235	240
Cys	His	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	245	250	255	
Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	260	265	270	
Ile	Ile	Arg	Ser	Glu	Asn	Leu	Thr	Asn	Asn	Ala	Lys	Thr	Ile	Ile	Val	275	280	285	
His	Leu	Asn	Glu	Ser	Ile	Glu	Ile	Val	Cys	Thr	Arg	Pro	Asn	Asn	Asn	290	295	300	
Thr	Arg	Lys	Ser	Ile	Arg	Ile	Gly	Pro	Gly	Gln	Thr	Val	Tyr	Ala	Thr	305	310	315	320
Asn	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	Cys	Asn	Ile	Ser	Lys	325	330	335	
Thr	Lys	Trp	Asn	Thr	Thr	Leu	Glu	Lys	Val	Lys	Glu	Lys	Leu	Lys	Glu	340	345	350	
His	Phe	Pro	Ser	Lys	Ala	Ile	Thr	Phe	Gln	Pro	His	Ser	Gly	Gly	Asp	355	360	365	
Leu	Glu	Val	Thr	Thr	His	Ser	Phe	Asn	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	370	375	380	
Cys	Asp	Thr	Thr	Lys	Leu	Phe	Asn	Glu	Ser	Asn	Leu	Asn	Thr	Thr	Asn	385	390	395	400
Thr	Thr	Thr	Leu	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Val	Asn	Met	405	410	415	
Trp	Gln	Gly	Val	Gly	Arg	Ala	Met	Tyr	Ala	Pro	Pro	Val	Glu	Gly	Asn	420	425	430	
Ile	Thr	Cys	Asn	Ser	Ser	Ile	Thr	Gly	Leu	Leu	Leu	Val	Arg	Asp	Gly	435	440	445	
Gly	Asn	Thr	Ser	Asn	Ser	Thr	Pro	Glu	Ile	Phe	Arg	Pro	Gly	Gly	Gly	450	455	460	
Asn	Met	Lys	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	465	470	475	480

Glu Ile Lys Pro Leu Gly Val Ala Pro Thr Lys Ala Lys Thr Leu Thr
485 490 495

Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Ser Asn
500 505 510

Leu Leu Arg Ala Ile Glu Ala Gln Gln His Met Leu Gln Leu Thr Val
515 520 525

Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Ile Glu Arg Tyr
530 535 540

Leu Lys Asp Gln Gln Leu Leu Gly Leu Trp Gly Cys Ser Gly Lys Leu
545 550 555 560

Ile Cys Pro Thr Thr Val Pro Trp Asn Ser Ser Trp Ser Asn Lys Ser
565 570 575

Gln Thr Asp Ile Trp Asp Asn Met Thr Trp Met Gln Trp Asp Arg Glu
580 585 590

Ile Ser Asn Tyr Thr Gly Thr Ile Tyr Lys Leu Leu Glu Glu Ser Gln
595 600 605

Asn Gln Gln Glu Lys Asn Glu Lys Asp Leu Leu Ala Leu Asp Ser Trp
610 615 620

Lys Asn Leu Trp Ser Trp Phe Asp Ile Thr Asn Trp Leu Trp
625 630 635

<210> 58

<211> 1945

<212> DNA

<213> Human immunodeficiency virus

<400> 58

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<210> 59

<211> 854

<212> PRT

<213> Human immunodeficiency virus

<400> 59

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Gly Thr Leu Ile Leu Gly Leu Val Ile Ile Cys Ser Ala Ser Asp Asn
      20              25              30

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Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Arg Asp Ala Asp
      35              40              45

```

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Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala His Glu Thr Glu Val
      50              55              60

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```

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
      65              70              75              80

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```

Gln Glu Ile His Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Arg
      85              90              95

```

```

Asn Asn Met Val Glu Gln Met Gln Glu Asp Val Ile Ser Leu Trp Asp
      100             105             110

```

```

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
      115             120             125

```

```

Asn Cys Thr Asn Ala Asn Trp Thr Asn Ser Asn Asn Thr Thr Asn Gly
      130             135             140

```

```

Pro Asn Lys Ile Gly Asn Ile Thr Asp Glu Val Lys Asn Cys Thr Phe
      145             150             155             160

```

```

Asn Met Thr Thr Glu Leu Lys Asp Lys Lys Gln Lys Val His Ala Leu
      165             170             175

```

```

Phe Tyr Lys Leu Asp Ile Val Gln Ile Asn Ser Ser Glu Tyr Arg Leu
      180             185             190

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Ile	Asn	Cys	Asn	Thr	Ser	Val	Ile	Lys	Gln	Ala	Cys	Pro	Lys	Ile	Ser	195	200	205
Phe	Asp	Pro	Ile	Pro	Ile	His	Tyr	Cys	Thr	Pro	Ala	Gly	Tyr	Ala	Ile	210	215	220
Leu	Lys	Cys	Asn	Asp	Lys	Asn	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	225	230	235
Val	Ser	Ser	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	245	250	255
Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	260	265	270
Ser	Glu	Asn	Leu	Thr	Asn	Asn	Ala	Lys	Thr	Ile	Ile	Val	His	Leu	Asn	275	280	285
Lys	Ser	Val	Glu	Ile	Asn	Cys	Thr	Arg	Pro	Ser	Asn	Asn	Thr	Arg	Thr	290	295	300
Ser	Ile	Thr	Met	Gly	Pro	Gly	Gln	Val	Phe	Tyr	Arg	Thr	Gly	Asp	Ile	305	310	315
Ile	Gly	Asp	Ile	Arg	Lys	Ala	Tyr	Cys	Glu	Ile	Asn	Gly	Ile	Lys	Trp	325	330	335
Asn	Glu	Val	Leu	Val	Gln	Val	Thr	Gly	Lys	Leu	Lys	Glu	His	Phe	Asn	340	345	350
Lys	Thr	Ile	Ile	Phe	Gln	Pro	Pro	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Ile	355	360	365
Thr	His	His	Phe	Ser	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Thr	370	375	380
Lys	Leu	Phe	Asn	Asn	Thr	Cys	Ile	Gly	Asn	Thr	Ser	Met	Glu	Gly	Cys	385	390	395
Asn	Asn	Thr	Ile	Ile	Leu	Pro	Cys	Lys	Ile	Lys	Gln	Ile	Ile	Asn	Met	405	410	415
Trp	Gln	Gly	Val	Gly	Gln	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Ser	Gly	Arg	420	425	430
Ile	Asn	Cys	Val	Ser	Asn	Ile	Thr	Gly	Ile	Leu	Leu	Thr	Arg	Asp	Gly	435	440	445
Gly	Ala	Asp	Asn	Asn	Thr	Thr	Asn	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly	450	455	460
Asn	Ile	Lys	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	465	470	475
Glu	Ile	Glu	Pro	Leu	Gly	Ile	Ala	Pro	Thr	Arg	Ala	Lys	Arg	Arg	Val	485	490	495

Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	Met	Ile	Phe	Gly	500	505	510
Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Ile	Thr	Leu	515	520	525
Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	530	535	540
Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr	545	550	555
Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	565	570	575
Tyr	Leu	Lys	Asp	Gln	Lys	Phe	Leu	Gly	Leu	Trp	Gly	Cys	Ser	Gly	Lys	580	585	590
Ile	Ile	Cys	Thr	Thr	Ala	Val	Pro	Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	595	600	605
Ser	Phe	Glu	Glu	Ile	Trp	Asp	Asn	Met	Thr	Trp	Ile	Glu	Trp	Glu	Arg	610	615	620
Glu	Ile	Ser	Asn	Tyr	Thr	Ser	Gln	Ile	Tyr	Glu	Ile	Leu	Thr	Glu	Ser	625	630	635
Gln	Asn	Gln	Gln	Asp	Arg	Asn	Glu	Lys	Asp	Leu	Leu	Glu	Leu	Asp	Lys	645	650	655
Trp	Ala	Ser	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Asn	Trp	Leu	Trp	Tyr	660	665	670
Ile	Lys	Ile	Phe	Ile	Ile	Ile	Val	Gly	Ser	Leu	Ile	Gly	Leu	Arg	Ile	675	680	685
Ile	Phe	Ala	Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg	Gln	Gly	Tyr	Ser	690	695	700
Pro	Leu	Ser	Phe	Gln	Thr	Pro	Thr	His	His	Gln	Arg	Glu	Pro	Asp	Arg	705	710	715
Pro	Glu	Glu	Ile	Gly	Glu	Gly	Gly	Gly	Glu	Gln	Ser	Lys	Asp	Arg	Ser	725	730	735
Val	Arg	Leu	Val	Ser	Gly	Phe	Leu	Ala	Leu	Ala	Trp	Asp	Asp	Leu	Arg	740	745	750
Ser	Leu	Cys	Leu	Phe	Ser	Tyr	His	Leu	Leu	Arg	Asp	Phe	Ile	Leu	Ile	755	760	765
Ala	Ala	Arg	Thr	Val	Glu	Leu	Leu	Gly	His	Ser	Ser	Leu	Lys	Gly	Leu	770	775	780
Arg	Arg	Gly	Trp	Glu	Gly	Leu	Lys	Tyr	Leu	Gly	Asn	Leu	Leu	Leu	Tyr	785	790	795

Phe	Asp	Pro	Ile	Pro	Ile	His	Tyr	Cys	Thr	Pro	Ala	Gly	Tyr	Ala	Ile	210	215	220	
Leu	Lys	Cys	Asn	Asp	Lys	Asn	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	225	230	235	240
Val	Ser	Ser	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	245	250	255	
Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	260	265	270	
Ser	Glu	Asn	Leu	Thr	Asn	Asn	Ala	Lys	Thr	Ile	Ile	Val	His	Leu	Asn	275	280	285	
Lys	Ser	Val	Glu	Ile	Asn	Cys	Thr	Arg	Pro	Ser	Asn	Asn	Thr	Arg	Thr	290	295	300	
Ser	Ile	Thr	Met	Gly	Pro	Gly	Gln	Val	Phe	Tyr	Arg	Thr	Gly	Asp	Ile	305	310	315	320
Ile	Gly	Asp	Ile	Arg	Lys	Ala	Tyr	Cys	Glu	Ile	Asn	Gly	Ile	Lys	Trp	325	330	335	
Asn	Glu	Val	Leu	Val	Gln	Val	Thr	Gly	Lys	Leu	Lys	Glu	His	Phe	Asn	340	345	350	
Lys	Thr	Ile	Ile	Phe	Gln	Pro	Pro	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Ile	355	360	365	
Thr	His	His	Phe	Ser	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Thr	370	375	380	
Lys	Leu	Phe	Asn	Asn	Thr	Cys	Ile	Gly	Asn	Thr	Ser	Met	Glu	Gly	Cys	385	390	395	400
Asn	Asn	Thr	Ile	Ile	Leu	Pro	Cys	Lys	Ile	Lys	Gln	Ile	Ile	Asn	Met	405	410	415	
Trp	Gln	Gly	Val	Gly	Gln	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Ser	Gly	Arg	420	425	430	
Ile	Asn	Cys	Val	Ser	Asn	Ile	Thr	Gly	Ile	Leu	Leu	Thr	Arg	Asp	Gly	435	440	445	
Gly	Ala	Asp	Asn	Asn	Thr	Thr	Asn	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly	450	455	460	
Asn	Ile	Lys	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	465	470	475	480
Glu	Ile	Glu	Pro	Leu	Gly	Ile	Ala	Pro	Thr	Arg	Ala	Arg	Thr	Leu	Thr	485	490	495	
Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	500	505	510	

Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val
 515 520 525
 Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Val Glu Arg Tyr
 530 535 540
 Leu Lys Asp Gln Lys Phe Leu Gly Leu Trp Gly Cys Ser Gly Lys Ile
 545 550 555 560
 Ile Cys Thr Thr Ala Val Pro Trp Asn Ser Ser Trp Ser Asn Lys Ser
 565 570 575
 Phe Glu Glu Ile Trp Asp Asn Met Thr Trp Ile Glu Trp Glu Arg Glu
 580 585 590
 Ile Ser Asn Tyr Thr Ser Gln Ile Tyr Glu Ile Leu Thr Glu Ser Gln
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<210> 61
 <211> 1921
 <212> DNA
 <213> Human immunodeficiency virus

<400> 61
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<210> 62

<211> 854

<212> PRT

<213> Human immunodeficiency virus

<400> 62

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Met Arg Val Lys Gly Ile Gln Arg Asn Trp Gln His Leu Trp Asn Trp
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Gly Ile Leu Ile Leu Gly Leu Val Ile Ile Cys Ser Ala Glu Lys Leu
      20             25             30

Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Glu Asp Ala Asn Ala
      35             40             45

Pro Leu Phe Cys Ala Ser Asp Ala Lys Ala His Ser Thr Glu Ser His
      50             55             60

Asn Ile Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Ser Pro Gln
      65             70             75             80

Glu Ile Asn Met Arg Asn Val Thr Glu Asn Phe Asn Met Trp Lys Asn
      85             90             95

Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp Glu
      100            105            110

Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu Asn
      115            120            125

Cys Thr Glu Ile Asn Asn Asn Ser Thr Arg Asn Ile Thr Glu Glu Tyr
      130            135            140

Arg Met Thr Asn Cys Ser Phe Asn Met Thr Thr Glu Leu Arg Asp Lys
      145            150            155            160

Lys Lys Ala Glu Tyr Ala Leu Phe Tyr Arg Thr Asp Val Val Pro Ile
      165            170            175

Asn Glu Met Asn Asn Glu Asn Asn Gly Thr Asn Ser Thr Trp Tyr Arg
      180            185            190

Leu Thr Asn Cys Asn Val Ser Thr Ile Lys Gln Ala Cys Pro Lys Val
      195            200            205

Thr Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe Ala
      210            215            220

```

Ile	Leu	Lys	Cys	Val	Asp	Lys	Lys	Phe	Asn	Gly	Thr	Gly	Thr	Cys	Asn	
225					230					235					240	
Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	
				245					250						255	
Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Lys	Asp	Ile	Ile	Ile	
			260					265						270		
Ser	Ser	Glu	Asn	Ile	Ser	Asp	Asn	Ala	Lys	Val	Ile	Ile	Val	His	Leu	
		275					280					285				
Asn	Arg	Ser	Val	Glu	Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	
	290						295				300					
Arg	Ser	Val	Ala	Ile	Gly	Pro	Gly	Gln	Ala	Phe	Tyr	Thr	Thr	Gly	Glu	
305					310					315					320	
Val	Ile	Gly	Asp	Ile	Arg	Lys	Ala	His	Cys	Asn	Val	Ser	Trp	Thr	Lys	
				325					330					335		
Trp	Asn	Glu	Thr	Leu	Arg	Asp	Val	Gln	Ala	Lys	Leu	Gln	Glu	Tyr	Phe	
			340					345					350			
Ile	Asn	Lys	Ser	Ile	Glu	Phe	Asn	Ser	Ser	Ser	Gly	Gly	Asp	Leu	Glu	
		355					360					365				
Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	
	370					375					380					
Thr	Ser	Gly	Leu	Phe	Asn	Asn	Ser	Ile	Leu	Lys	Ser	Asn	Ile	Ser	Glu	
385					390					395					400	
Asn	Asn	Asp	Thr	Ile	Thr	Leu	Asn	Cys	Lys	Ile	Lys	Gln	Ile	Val	Arg	
			405						410					415		
Met	Trp	Gln	Arg	Val	Gly	Gln	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Ala	Gly	
			420					425					430			
Asn	Ile	Thr	Cys	Arg	Ser	Asn	Ile	Thr	Gly	Leu	Ile	Leu	Thr	Arg	Asp	
		435					440					445				
Gly	Gly	Asp	Asn	Asn	Ser	Thr	Ser	Glu	Ile	Phe	Arg	Pro	Gly	Gly	Gly	
	450					455					460					
Asp	Met	Lys	Asn	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Thr	Val	
465					470					475					480	
Lys	Ile	Lys	Ser	Leu	Gly	Ile	Ala	Pro	Thr	Arg	Ala	Arg	Arg	Arg	Val	
				485					490					495		
Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Val	Gly	Ala	Ile	Phe	Leu	Gly	
			500					505					510			
Phe	Leu	Gly	Thr	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Ile	Thr	Leu	
		515					520					525				

Thr	Val	Gln	Val	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser
530						535					540				
Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr
545					550					555					560
Val	Trp	Gly	Ile	Lys	Gln	Leu	Arg	Ala	Arg	Val	Leu	Ala	Leu	Glu	Arg
				565					570					575	
Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys
			580					585					590		
Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro	Trp	Asn	Thr	Ser	Trp	Ser	Asn	Lys
		595					600					605			
Ser	Tyr	Asn	Glu	Ile	Trp	Glu	Asn	Met	Thr	Trp	Ile	Glu	Trp	Glu	Arg
	610					615					620				
Glu	Ile	Asp	Asn	Tyr	Thr	Tyr	His	Ile	Tyr	Ser	Leu	Ile	Glu	Gln	Ser
625					630					635					640
Gln	Ile	Gln	Gln	Glu	Lys	Asn	Glu	Gln	Asp	Leu	Leu	Ala	Leu	Asp	Gln
				645					650					655	
Trp	Ala	Ser	Leu	Trp	Ser	Trp	Phe	Ser	Ile	Ser	Asn	Trp	Leu	Trp	Tyr
			660					665					670		
Ile	Arg	Ile	Phe	Val	Met	Ile	Val	Gly	Gly	Leu	Ile	Gly	Leu	Arg	Ile
		675					680					685			
Val	Phe	Ala	Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg	Gln	Gly	Tyr	Ser
	690					695					700				
Pro	Leu	Ser	Phe	Gln	Thr	Leu	Leu	His	His	Gln	Arg	Glu	Pro	Asp	Arg
705					710					715					720
Pro	Ala	Gly	Ile	Glu	Glu	Gly	Gly	Gly	Gly	Glu	Gln	Asp	Arg	Asp	Arg
				725						730				735	
Ile	Arg	Leu	Val	Ser	Gly	Phe	Leu	Ala	Leu	Ala	Trp	Asp	Asp	Leu	Arg
			740					745					750		
Ser	Leu	Cys	Leu	Phe	Ser	Tyr	His	Arg	Leu	Arg	Asp	Phe	Ile	Leu	Ile
		755					760					765			
Ala	Ala	Arg	Thr	Val	Glu	Leu	Leu	Gly	Arg	Asn	Ser	Leu	Lys	Gly	Leu
	770					775					780				
Arg	Leu	Gly	Trp	Glu	Ala	Leu	Lys	Tyr	Leu	Trp	Asn	Leu	Leu	Leu	Tyr
785					790					795					800
Trp	Ala	Arg	Glu	Leu	Lys	Asn	Ser	Ala	Ile	Asn	Leu	Leu	Asp	Thr	Ile
				805					810					815	
Ala	Ile	Ala	Val	Ala	Asn	Trp	Thr	Asp	Arg	Val	Ile	Glu	Val	Ala	Gln
			820					825					830		

Arg Ala Gly Arg Ala Val Leu Asn Ile Pro Arg Arg Ile Arg Gln Gly
835 840 845

Leu Glu Arg Ala Leu Leu
850

<210> 63

<211> 630

<212> PRT

<213> Human immunodeficiency virus

<400> 63

Met Arg Val Lys Gly Ile Gln Arg Asn Trp Gln His Leu Trp Asn Trp
1 5 10 15

Gly Ile Leu Ile Leu Gly Leu Val Ile Ile Cys Ser Ala Glu Lys Leu
20 25 30

Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Glu Asp Ala Asn Ala
35 40 45

Pro Leu Phe Cys Ala Ser Asp Ala Lys Ala His Ser Thr Glu Ser His
50 55 60

Asn Ile Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Ser Pro Gln
65 70 75 80

Glu Ile Asn Met Arg Asn Val Thr Glu Asn Phe Asn Met Trp Lys Asn
85 90 95

Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp Glu
100 105 110

Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu Asn
115 120 125

Cys Thr Glu Ile Asn Asn Asn Ser Thr Arg Asn Ile Thr Glu Glu Tyr
130 135 140

Arg Met Thr Asn Cys Ser Phe Asn Met Thr Thr Glu Leu Arg Asp Lys
145 150 155 160

Lys Lys Ala Glu Tyr Ala Leu Phe Tyr Arg Thr Asp Val Val Pro Ile
165 170 175

Asn Glu Met Asn Asn Glu Asn Asn Gly Thr Asn Ser Thr Trp Tyr Arg
180 185 190

Leu Thr Asn Cys Asn Val Ser Thr Ile Lys Gln Ala Cys Pro Lys Val
195 200 205

Thr Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe Ala
210 215 220

Ile Leu Lys Cys Val Asp Lys Lys Phe Asn Gly Thr Gly Thr Cys Asn

225		230		235		240
Asn Val Ser Thr	Val Gln Cys Thr His	Gly Ile Lys Pro	Val Val Ser			
	245	250	255			
Thr Gln Leu Leu	Leu Asn Gly Ser	Leu Ala Glu Lys Asp	Ile Ile Ile			
	260	265	270			
Ser Ser Glu Asn	Ile Ser Asp Asn	Ala Lys Val Ile	Ile Val His Leu			
	275	280	285			
Asn Arg Ser Val	Glu Ile Asn Cys Thr	Arg Pro Asn Asn	Asn Thr Arg			
	290	295	300			
Arg Ser Val Ala	Ile Gly Pro Gly	Gln Ala Phe Tyr	Thr Thr Gly Glu			
305	310	315	320			
Val Ile Gly Asp	Ile Arg Lys Ala	His Cys Asn Val	Ser Trp Thr Lys			
	325	330	335			
Trp Asn Glu Thr	Leu Arg Asp Val	Gln Ala Lys Leu	Gln Glu Tyr Phe			
	340	345	350			
Ile Asn Lys Ser	Ile Glu Phe Asn	Ser Ser Ser Gly	Gly Asp Leu Glu			
	355	360	365			
Ile Thr Thr His	Ser Phe Asn Cys	Gly Gly Glu Phe	Phe Tyr Cys Asn			
	370	375	380			
Thr Ser Gly Leu	Phe Asn Asn Ser	Ile Leu Lys Ser	Asn Ile Ser Glu			
385	390	395	400			
Asn Asn Asp Thr	Ile Thr Leu Asn	Cys Lys Ile Lys	Gln Ile Val Arg			
	405	410	415			
Met Trp Gln Arg	Val Gly Gln Ala	Met Tyr Ala Pro	Pro Ile Ala Gly			
	420	425	430			
Asn Ile Thr Cys	Arg Ser Asn Ile	Thr Gly Leu Ile	Leu Thr Arg Asp			
	435	440	445			
Gly Gly Asp Asn	Asn Ser Thr Ser	Glu Ile Phe Arg	Pro Gly Gly Gly			
	450	455	460			
Asp Met Lys Asn	Asn Trp Arg Ser	Glu Leu Tyr Lys	Tyr Lys Thr Val			
465	470	475	480			
Lys Ile Lys Ser	Leu Gly Ile Ala	Pro Thr Arg Ala	Arg Thr Leu Thr			
	485	490	495			
Val Gln Val Arg	Gln Leu Leu Ser	Gly Ile Val Gln	Gln Gln Ser Asn			
	500	505	510			
Leu Leu Arg Ala	Ile Glu Ala Gln	Gln His Leu Leu	Gln Leu Thr Val			
	515	520	525			
Trp Gly Ile Lys	Gln Leu Arg Ala	Arg Val Leu Ala	Leu Glu Arg Tyr			

530

535

540

Leu Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly Lys Leu
 545 550 555 560

Ile Cys Thr Thr Asn Val Pro Trp Asn Thr Ser Trp Ser Asn Lys Ser
 565 570 575

Tyr Asn Glu Ile Trp Glu Asn Met Thr Trp Ile Glu Trp Glu Arg Glu
 580 585 590

Ile Asp Asn Tyr Thr Tyr His Ile Tyr Ser Leu Ile Glu Gln Ser Gln
 595 600 605

Ile Gln Gln Glu Lys Asn Glu Gln Asp Leu Leu Ala Leu Asp Gln Trp
 610 615 620

Ala Ser Leu Trp Ser Trp
 625 630

<210> 64

<211> 1921

<212> DNA

<213> Human immunodeficiency virus

<400> 64

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 actggggcat attgattcct ggactggtga taattttagt cgctgaaaaa ctctgggtaa 120
 ctgtctatta cggcgtgcct gtctgggagg atgccaacgc cccctgttc tgcgcaagt 180
 atgcaaagc tcacagcact gaatctcaca acatttgggc caccacgcc tgtgtgccaa 240
 ccgaccctag tctcaggag atcaacatga gaaacgttac cgaaaatttt aatatgtgga 300
 agaataatat ggtggagcaa atgcacgaag acataatttc actctgggac gagtctctga 360
 aacctgtgt gaaacttacc cccctgtgcg tcacctgaa ctgtaccgaa atcaacaata 420
 actcaacgag aaatatcaca gaagaatacc gaatgactaa ctgttccttt aatatgacaa 480
 ccgaactgag agacaaaaag aaggctgaat acgcactttt ctaccgaaca gatgtgtgtac 540
 caatcaacga gatgaacaat gaaaacaatg gaacgaactc tacctggtat agactgacaa 600
 actgtaacgt tagcacaatc aagcaggcct gccctaaagt cacattcgaa ccaataccaa 660
 ttcactactg cgcacccgcc ggattcgcta ttcttaagt cgtggataag aagtttaacg 720
 gaactggaac ctgcaataat gtatctacag tacaatgcac gcatggaatt aagcctgtcg 780
 tttcaaccca gttgctgctg aatggatcac tcgcagaaaa ggatattatt atctcaagcg 840
 aaaacatatc tgataatgca aaggtcatca tcgtccacct caaccgctca gttgaaataa 900
 actgcactcg gcctaataat aacacaagac gctctgtcgc aatcggccca ggacaagctt 960
 ttacactac cggggaagtt atcggcgaca tacggaaaag cactgcaac gttagctgga 1020
 ccaagtggaa tgaaacactg cgcgatgttc aagccaaact tcaagaatac ttcataaaca 1080
 aatcaattga gttcaattct agctctggcg gcgacctga gattacaact cactccttta 1140
 actgcggcgg cgaattcttt tattgtaata cctccggtct cttcaacaac tctatcctca 1200
 aaagtaacat ttctgaaaat aatgacacaa tcacactgaa ttgcaagatc aagcagattg 1260
 ttaggatgtg gcaacgagtc ggacaagcta tgtacgcccc acccatcgcc ggaaatataa 1320
 cgtgtcgatc aaatatcact ggccctcatc ttactagaga tggcggagac aataatagca 1380
 ccagcgagat attcagacca ggcggaggcg atatgaaaaa caactggagg tcagagctct 1440
 acaagtacaa aacagtcaaa attaaaagcc tgggcattgc tccactcgg gcccgcacac 1500
 tgactgtcca agtccgacag ctctgtccg gaatcgctca acaacagtcc aacttgctgc 1560
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a 1921

<210> 65

<211> 829

<212> PRT

<213> Human immunodeficiency virus

<400> 65

Met Arg Val Met Gly Ile Gln Arg Asn Cys Gln His Leu Trp Arg Trp
1 5 10 15

Gly Ile Leu Ile Phe Gly Met Leu Ile Ile Cys Ser Ala Ala Glu Asn
20 25 30

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Asn
35 40 45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val
50 55 60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
65 70 75 80

Gln Glu Ile Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
85 90 95

Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
100 105 110

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
115 120 125

Asn Cys Thr Asp Val Asn Ala Thr Asn Asn Thr Thr Asn Asn Glu Glu
130 135 140

Ile Lys Asn Cys Ser Phe Asn Ile Thr Thr Glu Ile Arg Asp Lys Lys
145 150 155 160

Lys Lys Val Tyr Ala Leu Phe Tyr Lys Leu Asp Val Val Pro Ile Asp
165 170 175

Asp Asn Asn Ser Tyr Arg Leu Ile Asn Cys Asn Thr Ser Ala Ile Thr
180 185 190

Gln Ala Cys Pro Lys Val Ser Phe Glu Pro Ile Pro Ile His Tyr Cys
195 200 205

Ala Pro Ala Gly Phe Ala Ile Leu Lys Cys Asn Asp Lys Lys Phe Asn
210 215 220

Gly Thr Gly Pro Cys Lys Asn Val Ser Thr Val Gln Cys Thr His Gly
225 230 235 240

Ile Lys Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly Ser Leu Ala

245										250					255				
Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Ile	Thr	Asn	Asn	Ala	Lys				
			260					265					270						
Thr	Ile	Ile	Val	Gln	Leu	Asn	Glu	Ser	Val	Glu	Ile	Asn	Cys	Thr	Arg				
			275				280					285							
Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	Gly	Pro	Gly	Gln	Ala				
	290					295					300								
Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	Cys				
305					310					315					320				
Asn	Ile	Ser	Arg	Thr	Lys	Trp	Asn	Lys	Thr	Leu	Gln	Gln	Val	Ala	Lys				
				325					330					335					
Lys	Leu	Arg	Glu	His	Phe	Asn	Lys	Thr	Ile	Ile	Phe	Asn	Pro	Ser	Ser				
			340					345					350						
Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Gly	Gly	Glu				
		355					360					365							
Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Glu	Leu	Phe	Asn	Ser	Thr	Trp	Asn	Gly				
	370					375					380								
Thr	Asn	Asn	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn				
385					390					395					400				
Met	Trp	Gln	Gly	Val	Gly	Gln	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Glu	Gly				
				405					410					415					
Lys	Ile	Arg	Cys	Thr	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp				
			420					425					430						
Gly	Gly	Asn	Asn	Asn	Thr	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met				
		435					440					445							
Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile				
	450					455					460								
Glu	Pro	Leu	Gly	Val	Ala	Pro	Thr	Lys	Ala	Lys	Arg	Arg	Val	Val	Glu				
465					470					475					480				
Arg	Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	Val	Phe	Leu	Gly	Phe	Leu				
				485					490					495					
Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Ile	Thr	Leu	Thr	Val				
			500					505					510						
Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu				
		515					520					525							
Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr	Val	Trp				
	530					535					540								
Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu				

545		550		555		560									
Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile
				565					570					575	
Cys	Thr	Thr	Asn	Val	Pro	Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Gln
			580					585					590		
Asp	Glu	Ile	Trp	Asp	Asn	Met	Thr	Trp	Met	Glu	Trp	Asp	Lys	Glu	Ile
		595					600					605			
Asn	Asn	Tyr	Thr	Asp	Ile	Ile	Tyr	Ser	Leu	Ile	Glu	Glu	Ser	Gln	Asn
	610					615					620				
Gln	Gln	Glu	Lys	Asn	Glu	Gln	Glu	Leu	Leu	Ala	Leu	Asp	Lys	Trp	Ala
625					630					635					640
Ser	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Asn	Trp	Leu	Trp	Tyr	Ile	Lys
			645						650					655	
Ile	Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile	Gly	Leu	Arg	Ile	Val	Phe
			660					665					670		
Ala	Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg	Gln	Gly	Tyr	Ser	Pro	Leu
		675					680					685			
Ser	Phe	Gln	Thr	Leu	Ile	Pro	Asn	Pro	Arg	Gly	Pro	Asp	Arg	Pro	Glu
	690					695					700				
Gly	Ile	Glu	Glu	Glu	Gly	Gly	Glu	Gln	Asp	Arg	Asp	Arg	Ser	Ile	Arg
705					710					715					720
Leu	Val	Asn	Gly	Phe	Leu	Ala	Leu	Ala	Trp	Asp	Asp	Leu	Arg	Ser	Leu
			725						730					735	
Cys	Leu	Phe	Ser	Tyr	His	Arg	Leu	Arg	Asp	Leu	Ile	Leu	Ile	Ala	Ala
			740					745					750		
Arg	Thr	Val	Glu	Leu	Leu	Gly	Arg	Arg	Gly	Trp	Glu	Ala	Leu	Lys	Tyr
		755					760					765			
Leu	Trp	Asn	Leu	Leu	Gln	Tyr	Trp	Gly	Gln	Glu	Leu	Lys	Asn	Ser	Ala
	770					775					780				
Ile	Ser	Leu	Leu	Asp	Thr	Thr	Ala	Ile	Ala	Val	Ala	Glu	Gly	Thr	Asp
785					790					795					800
Arg	Val	Ile	Glu	Val	Val	Gln	Arg	Val	Cys	Arg	Ala	Ile	Leu	Asn	Ile
				805					810					815	
Pro	Arg	Arg	Ile	Arg	Gln	Gly	Phe	Glu	Arg	Ala	Leu	Leu			
			820					825							

<210> 66
 <211> 830
 <212> PRT

<213> Human immunodeficiency virus

<400> 66

Met	Arg	Val	Met	Gly	Ile	Gln	Arg	Asn	Cys	Gln	His	Leu	Trp	Arg	Trp
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Gly	Ile	Leu	Ile	Phe	Gly	Met	Leu	Met	Ile	Cys	Ser	Ala	Ala	Glu	Asn
			20					25					30		
Leu	Trp	Val	Thr	Val	Tyr	Tyr	Gly	Val	Pro	Val	Trp	Lys	Glu	Ala	Asn
		35					40					45			
Thr	Thr	Leu	Phe	Cys	Ala	Ser	Asp	Ala	Lys	Ala	Tyr	Asp	Thr	Glu	Val
	50					55					60				
His	Asn	Val	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro
65					70					75					80
Gln	Glu	Ile	Val	Leu	Glu	Asn	Val	Thr	Glu	Asn	Phe	Asn	Met	Trp	Lys
			85						90					95	
Asn	Asn	Met	Val	Glu	Gln	Met	His	Glu	Asp	Ile	Ile	Ser	Leu	Trp	Asp
		100						105					110		
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu
		115					120					125			
Asn	Cys	Thr	Asp	Val	Asn	Ala	Thr	Asn	Asn	Ser	Thr	Asn	Met	Gly	Glu
	130					135					140				
Ile	Lys	Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	Glu	Ile	Arg	Asp	Lys	Lys
145					150					155					160
Gln	Lys	Val	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Val	Val	Pro	Ile	Asn
				165					170					175	
Asp	Asn	Asn	Ser	Tyr	Arg	Leu	Ile	Asn	Cys	Asn	Thr	Ser	Ala	Ile	Thr
		180						185					190		
Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Glu	Pro	Ile	Pro	Ile	His	Tyr	Cys
		195					200					205			
Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Asn	Asp	Lys	Lys	Phe	Asn
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Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His	Gly
225					230					235					240
Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala
				245					250					255	
Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Ile	Thr	Asp	Asn	Ala	Lys
			260					265					270		
Thr	Ile	Ile	Val	Gln	Leu	Asn	Glu	Ser	Val	Glu	Ile	Asn	Cys	Thr	Arg
		275				280						285			

Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	Gly	Pro	Gly	Gln	Ala		
290						295					300						
Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	Cys		
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Asn	Ile	Ser	Gly	Ala	Glu	Trp	Asn	Lys	Thr	Leu	Gln	Gln	Val	Ala	Ala		
				325					330					335			
Lys	Leu	Arg	Glu	His	Phe	Asn	Asn	Lys	Thr	Ile	Ile	Phe	Lys	Pro	Ser		
			340					345					350				
Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Gly	Gly		
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Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Gly	Leu	Phe	Asn	Ser	Thr	Trp	Asn		
	370					375					380						
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Gly	Asn	Ile	Thr	Cys	Lys	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg		
			420					425					430				
Asp	Gly	Gly	Thr	Asn	Asn	Thr	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asp		
	435						440					445					
Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys		
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Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	Val	Phe	Leu	Gly	Phe		
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Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn		
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Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr		
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Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu		
			565					570						575			
Ile	Cys	Thr	Thr	Asn	Val	Pro	Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser		
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Gln Asp Glu Ile Trp Asp Asn Met Thr Trp Met Gln Trp Glu Arg Glu
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 Ile Ser Asn Tyr Thr Asp Ile Ile Tyr Ser Leu Ile Glu Glu Ser Gln
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 Asn Gln Gln Glu Lys Asn Glu Gln Asp Leu Leu Ala Leu Asp Lys Trp
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 Ala Ser Leu Trp Asn Trp Phe Asp Ile Thr Asn Trp Leu Trp Tyr Ile
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 Lys Ile Phe Ile Met Ile Val Gly Gly Leu Ile Gly Leu Arg Ile Val
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 Phe Ala Val Leu Ser Ile Val Asn Arg Val Arg Gln Gly Tyr Ser Pro
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 Gly Gly Ile Glu Glu Glu Gly Gly Glu Gln Asp Arg Asp Arg Ser Ile
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 725 730 735
 Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp Phe Ile Leu Ile Ala
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 Ala Arg Thr Val Glu Leu Leu Gly Arg Arg Gly Trp Glu Ala Leu Lys
 755 760 765
 Tyr Leu Trp Asn Leu Leu Gln Tyr Trp Gly Gln Glu Leu Lys Asn Ser
 770 775 780
 Ala Ile Ser Leu Leu Asp Thr Thr Ala Ile Ala Val Ala Glu Gly Thr
 785 790 795 800
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<210> 67

<211> 2493

<212> DNA

<213> Human immunodeficiency virus

<400> 67

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 gacaccgagg tgcacaacgt gtgggccacc cagcctgcg tgcccaccga cccaacccc 240
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<210> 68

<211> 845

<212> PRT

<213> Human immunodeficiency virus

<400> 68

Met Arg Val Met Gly Ile Gln Arg Asn Cys Gln His Leu Leu Arg Trp
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Gly Thr Met Ile Leu Gly Met Ile Ile Ile Cys Ser Ala Ala Glu Asn
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Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Asp Ala Glu
35 40 45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Thr Glu Met
50 55 60

His	Asn	Val	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro	65	70	75	80
Gln	Glu	Ile	His	Leu	Glu	Asn	Val	Thr	Glu	Glu	Phe	Asn	Met	Trp	Lys	85	90	95	
Asn	Asn	Met	Val	Glu	Gln	Met	His	Thr	Asp	Ile	Ile	Ser	Leu	Trp	Asp	100	105	110	
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu	115	120	125	
Asn	Cys	Ser	Asn	Val	Asn	Val	Thr	Asn	Asn	Thr	Thr	Asn	Thr	His	Glu	130	135	140	
Glu	Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Met	Thr	Thr	Glu	Leu	Arg	Asp	145	150	155	160
Lys	Lys	Gln	Lys	Val	Tyr	Ser	Leu	Phe	Tyr	Arg	Leu	Asp	Val	Val	Gln	165	170	175	
Ile	Asn	Glu	Asn	Asn	Ser	Asn	Ser	Ser	Tyr	Arg	Leu	Ile	Asn	Cys	Asn	180	185	190	
Thr	Ser	Ala	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Glu	Pro	Ile	195	200	205	
Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Lys	210	215	220	
Asp	Lys	Glu	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val	225	230	235	240
Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	245	250	255	
Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Val	Ile	Ile	Arg	Ser	Glu	Asn	Ile	260	265	270	
Thr	Asn	Asn	Ala	Lys	Thr	Ile	Ile	Val	Gln	Leu	Thr	Lys	Pro	Val	Lys	275	280	285	
Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	290	295	300	
Gly	Pro	Gly	Gln	Ala	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	305	310	315	320
Arg	Gln	Ala	His	Cys	Asn	Val	Ser	Arg	Ser	Glu	Trp	Asn	Lys	Thr	Leu	325	330	335	
Gln	Lys	Val	Ala	Lys	Gln	Leu	Arg	Lys	Tyr	Phe	Lys	Asn	Lys	Thr	Ile	340	345	350	
Ile	Phe	Thr	Asn	Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	355	360	365	

Phe	Asn	Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Gly	Leu	Phe
370						375					380				
Asn	Ser	Thr	Trp	Asn	Asn	Gly	Thr	Met	Lys	Asn	Thr	Ile	Thr	Leu	Pro
385					390					395					400
Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Arg	Ala	Gly	Gln	Ala
				405					410					415	
Met	Tyr	Ala	Pro	Pro	Ile	Gln	Gly	Val	Ile	Arg	Cys	Glu	Ser	Asn	Ile
			420					425					430		
Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Asn	Asn	Asn	Thr	Asn	Glu
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Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu
	450					455					460				
Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	Val	Ala	Pro
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Thr	Arg	Ala	Lys	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly
				485						490				495	
Ile	Gly	Ala	Val	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met
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Gly	Ala	Ala	Ser	Ile	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser
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						535					540				
Gln	His	Leu	Leu	Lys	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala
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Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly
				565					570					575	
Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro	Trp
			580					585					590		
Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Gln	Asn	Glu	Ile	Trp	Asp	Asn	Met
		595					600					605			
Thr	Trp	Leu	Gln	Trp	Asp	Lys	Glu	Ile	Ser	Asn	Tyr	Thr	His	Ile	Ile
	610				615						620				
Tyr	Asn	Leu	Ile	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu	Gln
625					630					635					640
Asp	Leu	Leu	Ala	Leu	Asp	Lys	Trp	Ala	Asn	Leu	Trp	Asn	Trp	Phe	Asp
				645					650					655	
Ile	Ser	Asn	Trp	Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	Val	Gly
			660					665					670		

Gly Leu Ile Gly Leu Arg Ile Val Phe Ala Val Leu Ser Val Ile Asn
 675 680 685
 Arg Val Arg Gln Gly Tyr Ser Pro Leu Ser Phe Gln Thr His Thr Pro
 690 695 700
 Asn Pro Arg Gly Leu Asp Arg Pro Gly Arg Ile Glu Glu Glu Gly Gly
 705 710 715 720
 Glu Gln Gly Arg Asp Arg Ser Ile Arg Leu Val Ser Gly Phe Leu Ala
 725 730 735
 Leu Ala Trp Asp Asp Leu Arg Ser Leu Cys Leu Phe Ser Tyr His Arg
 740 745 750
 Leu Arg Asp Phe Ile Leu Ile Ala Ala Arg Thr Val Glu Leu Leu Gly
 755 760 765
 His Ser Ser Leu Lys Gly Leu Arg Leu Gly Trp Glu Gly Leu Lys Tyr
 770 775 780
 Leu Trp Asn Leu Leu Leu Tyr Trp Gly Arg Glu Leu Lys Ile Ser Ala
 785 790 795 800
 Ile Asn Leu Val Asp Thr Ile Ala Ile Ala Val Ala Gly Trp Thr Asp
 805 810 815
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 Pro Arg Arg Ile Arg Gln Gly Leu Glu Arg Ala Leu Leu
 835 840 845

<210> 69

<211> 845

<212> PRT

<213> Human immunodeficiency virus

<400> 69

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 Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Asp Ala Glu
 35 40 45
 Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val
 50 55 60
 His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
 65 70 75 80
 Gln Glu Ile Asp Leu Glu Asn Val Thr Glu Glu Phe Asn Met Trp Lys
 85 90 95

Asn	Asn	Met	Val	Glu	Gln	Met	His	Ala	Asp	Ile	Ile	Ser	Leu	Trp	Asp		
			100					105					110				
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu		
		115					120					125					
Asn	Cys	Ser	Asn	Val	Asn	Val	Thr	Asn	Asn	Thr	Thr	Asn	Thr	His	Glu		
	130					135					140						
Glu	Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Met	Thr	Thr	Glu	Leu	Arg	Asp		
145					150					155					160		
Lys	Lys	Gln	Lys	Val	Tyr	Ser	Leu	Phe	Tyr	Arg	Leu	Asp	Val	Val	Pro		
				165					170					175			
Ile	Asn	Glu	Asn	Asn	Ser	Asn	Ser	Ser	Tyr	Arg	Leu	Ile	Asn	Cys	Asn		
			180					185						190			
Thr	Ser	Ala	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Glu	Pro	Ile		
		195					200					205					
Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Lys		
	210					215					220						
Asp	Lys	Glu	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val		
225					230					235					240		
Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu		
				245					250					255			
Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Val	Met	Ile	Arg	Ser	Glu	Asn	Ile		
			260					265					270				
Thr	Asp	Asn	Ala	Lys	Thr	Ile	Ile	Val	Gln	Leu	Thr	Glu	Pro	Val	Lys		
		275					280					285					
Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile		
	290					295					300						
Gly	Pro	Gly	Gln	Ala	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile		
305					310					315					320		
Arg	Gln	Ala	His	Cys	Asn	Val	Ser	Arg	Thr	Glu	Trp	Asn	Lys	Thr	Leu		
				325					330					335			
Gln	Lys	Val	Ala	Ala	Gln	Leu	Arg	Lys	His	Phe	Asn	Asn	Lys	Thr	Ile		
			340					345					350				
Ile	Phe	Asn	Ser	Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser		
		355					360					365					
Phe	Asn	Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Gly	Leu	Phe		
	370					375					380						
Asn	Ser	Thr	Trp	Asn	Asn	Gly	Thr	Met	Lys	Asp	Thr	Ile	Thr	Leu	Pro		
385					390					395					400		

Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Arg	Val	Gly	Gln	Ala
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Met	Tyr	Ala	Pro	Pro	Ile	Gln	Gly	Val	Ile	Arg	Cys	Glu	Ser	Asn	Ile
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Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Asn	Asn	Asn	Thr	Asn	Glu
				435						440		445			
Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu
				450						455		460			
Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	Val	Ala	Pro
465				470						475		480			
Thr	Arg	Ala	Lys	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly
				485						490		495			
Leu	Gly	Ala	Val	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met
				500						505		510			
Gly	Ala	Ala	Ser	Ile	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser
				515						520		525			
Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln
				530						535		540			
Gln	His	Leu	Leu	Lys	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala
545				550						555		560			
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				565						570		575			
Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro	Trp
				580						585		590			
Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Gln	Asp	Glu	Ile	Trp	Asp	Asn	Met
				595						600		605			
Thr	Trp	Leu	Gln	Trp	Asp	Lys	Glu	Ile	Ser	Asn	Tyr	Thr	Asp	Ile	Ile
				610						615		620			
Tyr	Asn	Leu	Ile	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu	Gln
625				630						635		640			
Asp	Leu	Leu	Ala	Leu	Asp	Lys	Trp	Ala	Asn	Leu	Trp	Asn	Trp	Phe	Asp
				645						650		655			
Ile	Ser	Asn	Trp	Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	Val	Gly
				660						665		670			
Gly	Leu	Ile	Gly	Leu	Arg	Ile	Val	Phe	Ala	Val	Leu	Ser	Val	Ile	Asn
				675						680		685			
Arg	Val	Arg	Gln	Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Thr	Leu	Thr	Pro
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Asn Pro Glu Gly Pro Asp Arg Pro Gly Arg Ile Glu Glu Glu Gly Gly
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 Glu Gln Gly Arg Asp Arg Ser Ile Arg Leu Val Ser Gly Phe Leu Ala
 725 730 735
 Leu Ala Trp Asp Asp Leu Arg Ser Leu Cys Leu Phe Ser Tyr His Arg
 740 745 750
 Leu Arg Asp Phe Ile Leu Ile Ala Ala Arg Thr Val Glu Leu Leu Gly
 755 760 765
 Arg Ser Ser Leu Lys Gly Leu Arg Leu Gly Trp Glu Gly Leu Lys Tyr
 770 775 780
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 785 790 795 800
 Ile Asn Leu Leu Asp Thr Ile Ala Ile Ala Val Ala Gly Trp Thr Asp
 805 810 815
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<210> 70
 <211> 2538
 <212> DNA
 <213> Human immunodeficiency virus

<400> 70
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<210> 71

<211> 2538

<212> DNA

<213> Human immunodeficiency virus

<400> 71

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<210> 72

<211> 2532

<212> DNA

<213> Human immunodeficiency virus

<400> 72

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<210> 73

<211> 843

<212> PRT

<213> Human immunodeficiency virus

<400> 73

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Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Asp Ala Asp Thr
      35             40             45

Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val His
      50             55             60

Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro Gln
      65             70             75             80

Glu Val Asn Leu Glu Asn Val Thr Glu Asp Phe Asn Met Trp Lys Asn
      85             90             95

Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp Gln
      100            105            110

Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu Asn
      115            120            125

Cys Ser Asn Ala Asn Thr Thr Asn Asn Ser Thr Met Glu Glu Ile Lys
      130            135            140

Asn Cys Ser Tyr Asn Ile Thr Thr Glu Leu Arg Asp Lys Thr Gln Lys
      145            150            155            160

Val Tyr Ser Leu Phe Tyr Lys Leu Asp Val Val Gln Leu Asp Glu Ser
      165            170            175

Asn Lys Ser Glu Tyr Tyr Tyr Arg Leu Ile Asn Cys Asn Thr Ser Ala
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Ile Thr Gln Ala Cys Pro Lys Val Ser Phe Glu Pro Ile Pro Ile His
      195            200            205

Tyr Cys Ala Pro Ala Gly Phe Ala Ile Leu Lys Cys Lys Asp Pro Arg

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210		215		220	
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His Gly Ile Lys Pro Val Ala Ser Thr Gln Leu Leu Leu Asn Gly Ser					
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Leu Ala Glu Gly Lys Val Met Ile Arg Ser Glu Asn Ile Thr Asn Asn					
	260		265		270
Ala Lys Asn Ile Ile Val Gln Phe Asn Lys Pro Val Pro Ile Thr Cys					
	275		280		285
Ile Arg Pro Asn Asn Asn Thr Arg Lys Ser Ile Arg Phe Gly Pro Gly					
	290		295		300
Gln Ala Phe Tyr Thr Asn Asp Ile Ile Gly Asp Ile Arg Gln Ala His					
305		310		315	320
Cys Asn Ile Asn Lys Thr Lys Trp Asn Ala Thr Leu Gln Lys Val Ala					
	325		330		335
Glu Gln Leu Arg Glu His Phe Pro Asn Lys Thr Ile Ile Phe Thr Asn					
	340		345		350
Ser Ser Gly Gly Asp Leu Glu Ile Thr Thr His Ser Phe Asn Cys Gly					
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Gly Glu Phe Phe Tyr Cys Asn Thr Thr Gly Leu Phe Asn Ser Thr Trp					
	370		375		380
Lys Asn Gly Thr Thr Asn Asn Thr Glu Gln Met Ile Thr Leu Pro Cys					
385		390		395	400
Arg Ile Lys Gln Ile Ile Asn Met Trp Gln Arg Val Gly Arg Ala Met					
	405		410		415
Tyr Ala Pro Pro Ile Ala Gly Val Ile Lys Cys Thr Ser Asn Ile Thr					
	420		425		430
Gly Ile Ile Leu Thr Arg Asp Gly Gly Asn Asn Glu Thr Glu Thr Phe					
	435		440		445
Arg Pro Gly Gly Gly Asp Met Arg Asp Asn Trp Arg Ser Glu Leu Tyr					
	450		455		460
Lys Tyr Lys Val Val Lys Ile Glu Pro Leu Gly Val Ala Pro Thr Arg					
465		470		475	480
Ala Lys Arg Arg Val Val Glu Arg Glu Lys Arg Ala Val Gly Met Gly					
	485		490		495
Ala Val Phe Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly Ala					
	500		505		510
Ala Ser Ile Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile					

515					520					525					
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545					550					555					560
Leu	Ala	Leu	Glu	Arg	Tyr	Leu	Gln	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp
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Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Ala	Thr	Thr	Val	Pro	Trp	Asn	Ser
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Ser	Trp	Ser	Asn	Lys	Thr	Gln	Glu	Glu	Ile	Trp	Asn	Asn	Met	Thr	Trp
		595					600					605			
Leu	Gln	Trp	Asp	Lys	Glu	Ile	Ser	Asn	Tyr	Thr	Asn	Ile	Ile	Tyr	Lys
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	675						680					685			
Arg	Gln	Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Ile	Pro	Thr	Pro	Asn	Pro
690						695					700				
Glu	Gly	Leu	Asp	Arg	Pro	Gly	Arg	Ile	Glu	Glu	Gly	Gly	Gly	Glu	Gln
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Gly	Arg	Asp	Arg	Ser	Ile	Arg	Leu	Val	Ser	Gly	Phe	Leu	Ala	Leu	Ala
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Trp	Asp	Asp	Leu	Arg	Ser	Leu	Cys	Leu	Phe	Ser	Tyr	His	Arg	Leu	Arg
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Asp	Cys	Ile	Leu	Ile	Ala	Ala	Arg	Thr	Val	Glu	Leu	Leu	Gly	His	Ser
	755						760					765			
Ser	Leu	Lys	Gly	Leu	Arg	Leu	Gly	Trp	Glu	Gly	Leu	Lys	Tyr	Leu	Trp
770						775					780				
Asn	Leu	Leu	Leu	Tyr	Trp	Gly	Arg	Glu	Leu	Lys	Asn	Ser	Ala	Ile	Ser
785					790					795					800
Leu	Leu	Asp	Thr	Ile	Ala	Val	Ala	Val	Ala	Glu	Trp	Thr	Asp	Arg	Val
				805					810					815	
Ile	Glu	Ile	Gly	Gln	Arg	Ala	Cys	Arg	Ala	Ile	Leu	Asn	Ile	Pro	Arg

820

825

830

Arg Ile Arg Gln Gly Phe Glu Arg Ala Leu Leu
 835 840

<210> 74

<211> 841

<212> PRT

<213> Human immunodeficiency virus

<400> 74

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 35 40 45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val
 50 55 60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
 65 70 75 80

Gln Glu Val Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
 85 90 95

Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
 100 105 110

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
 115 120 125

Asn Cys Thr Asp Leu Met Asn Ala Thr Asn Thr Asn Thr Thr Ile Ile
 130 135 140

Tyr Arg Trp Arg Gly Glu Ile Lys Asn Cys Ser Phe Asn Ile Thr Thr
 145 150 155 160

Ser Ile Arg Asp Lys Val Gln Lys Glu Tyr Ala Leu Phe Tyr Lys Leu
 165 170 175

Asp Val Val Pro Ile Asp Asn Asp Asn Thr Ser Tyr Arg Leu Ile Ser
 180 185 190

Cys Asn Thr Ser Val Ile Thr Gln Ala Cys Pro Lys Val Ser Phe Glu
 195 200 205

Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe Ala Ile Leu Lys
 210 215 220

Cys Asn Asp Lys Lys Phe Asn Gly Thr Gly Pro Cys Thr Asn Val Ser
 225 230 235 240

Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Arg	Pro	Val	Val	Ser	Thr	Gln	Leu	245	250	255
Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Val	Val	Ile	Arg	Ser	Glu	260	265	270
Asn	Phe	Thr	Asp	Asn	Ala	Lys	Thr	Ile	Ile	Val	Gln	Leu	Asn	Glu	Ser	275	280	285
Val	Glu	Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	290	295	300
His	Ile	Gly	Pro	Gly	Arg	Ala	Phe	Tyr	Thr	Thr	Gly	Glu	Ile	Ile	Gly	305	310	315
Asp	Ile	Arg	Gln	Ala	His	Cys	Asn	Ile	Ser	Arg	Ala	Lys	Trp	Asn	Asn	325	330	335
Thr	Leu	Lys	Gln	Ile	Val	Lys	Lys	Leu	Arg	Glu	Gln	Phe	Gly	Asn	Lys	340	345	350
Thr	Ile	Val	Phe	Asn	Gln	Ser	Ser	Gly	Gly	Asp	Pro	Glu	Ile	Val	Met	355	360	365
His	Ser	Phe	Asn	Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Thr	Gln	370	375	380
Leu	Phe	Asn	Ser	Thr	Trp	Asn	Gly	Thr	Trp	Asn	Asn	Thr	Glu	Gly	Asn	385	390	395
Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Glu	405	410	415
Val	Gly	Lys	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Arg	Gly	Gln	Ile	Arg	Cys	420	425	430
Ser	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Asn	Asn	435	440	445
Glu	Thr	Glu	Ile	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	450	455	460
Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	465	470	475
Val	Ala	Pro	Thr	Lys	Ala	Lys	Arg	Arg	Val	Val	Gln	Arg	Glu	Lys	Arg	485	490	495
Ala	Val	Gly	Ile	Gly	Ala	Met	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	500	505	510
Ser	Thr	Met	Gly	Ala	Ala	Ser	Met	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	515	520	525
Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Asn	Asn	Leu	Leu	Arg	Ala	Ile	530	535	540

Glu	Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	545	550	555	560
Leu	Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	565	570	575	
Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Ala	580	585	590	
Val	Pro	Trp	Asn	Ala	Ser	Trp	Ser	Asn	Lys	Ser	Leu	Asp	Glu	Ile	Trp	595	600	605	
Asp	Asn	Met	Thr	Trp	Met	Glu	Trp	Glu	Arg	Glu	Ile	Asp	Asn	Tyr	Thr	610	615	620	
Ser	Leu	Ile	Tyr	Thr	Leu	Ile	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	625	630	635	640
Asn	Glu	Gln	Glu	Leu	Leu	Glu	Leu	Asp	Lys	Trp	Ala	Ser	Leu	Trp	Asn	645	650	655	
Trp	Phe	Asp	Ile	Thr	Asn	Trp	Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	660	665	670	
Ile	Val	Gly	Gly	Leu	Val	Gly	Leu	Arg	Ile	Val	Phe	Ala	Val	Leu	Ser	675	680	685	
Ile	Val	Asn	Arg	Val	Arg	Gln	Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Thr	690	695	700	
Arg	Leu	Pro	Ala	Pro	Arg	Gly	Pro	Asp	Arg	Pro	Glu	Gly	Ile	Glu	Glu	705	710	715	720
Glu	Gly	Gly	Glu	Arg	Asp	Arg	Asp	Arg	Ser	Gly	Arg	Leu	Val	Asp	Gly	725	730	735	
Phe	Leu	Ala	Leu	Ile	Trp	Asp	Asp	Leu	Arg	Ser	Leu	Cys	Leu	Phe	Ser	740	745	750	
Tyr	His	Arg	Leu	Arg	Asp	Leu	Leu	Leu	Ile	Val	Thr	Arg	Ile	Val	Glu	755	760	765	
Leu	Leu	Gly	Arg	Arg	Gly	Trp	Glu	Val	Leu	Lys	Tyr	Trp	Trp	Asn	Leu	770	775	780	
Leu	Gln	Tyr	Trp	Ser	Gln	Glu	Leu	Lys	Asn	Ser	Ala	Val	Ser	Leu	Leu	785	790	795	800
Asn	Ala	Thr	Ala	Ile	Ala	Val	Ala	Glu	Gly	Thr	Asp	Arg	Val	Ile	Glu	805	810	815	
Val	Val	Gln	Arg	Ala	Cys	Arg	Ala	Ile	Leu	His	Ile	Pro	Arg	Arg	Ile	820	825	830	
Arg	Gln	Gly	Leu	Glu	Arg	Ala	Leu	Leu								835	840		

<210> 75
 <211> 2532
 <212> DNA
 <213> Human immunodeficiency virus

<400> 75
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 cccgtgtgga aggacgccga caccaccctg ttctgcgcct ccgacgccaa ggcctacgac 180
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 gccctgctgt aa 2532

<210> 76
 <211> 2526
 <212> DNA
 <213> Human immunodeficiency virus

<400> 76

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gacaccgagg tgcacaacgt gtgggccacc cagcctgctg tggccaccga ccccaacccc 240
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<210> 77

<211> 840

<212> PRT

<213> Human immunodeficiency virus

<400> 77

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                20                   25               30
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Leu	Trp	Val	Thr	Val	Tyr	Tyr	Gly	Val	Pro	Val	Trp	Lys	Glu	Ala	Thr	35	40	45
Thr	Thr	Leu	Phe	Cys	Ala	Ser	Asp	Ala	Lys	Ala	Tyr	Glu	Thr	Glu	Val	50	55	60
His	Asn	Val	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro	65	70	75
Gln	Glu	Val	Val	Leu	Glu	Asn	Val	Thr	Glu	Asn	Phe	Asn	Met	Trp	Lys	85	90	95
Asn	Asn	Met	Val	Glu	Gln	Met	His	Glu	Asp	Ile	Ile	Ser	Leu	Trp	Asp	100	105	110
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu	115	120	125
Asn	Cys	Thr	Asp	Leu	Leu	Asn	Ala	Thr	Asn	Thr	Asn	Ser	Thr	Asn	Met	130	135	140
Tyr	Arg	Trp	Arg	Gly	Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	145	150	155
Ser	Ile	Arg	Asp	Lys	Met	Gln	Lys	Glu	Tyr	Ala	Leu	Phe	Tyr	Lys	Leu	165	170	175
Asp	Val	Val	Pro	Ile	Asp	Asn	Asn	Thr	Ser	Tyr	Arg	Leu	Ile	Asn	Cys	180	185	190
Asn	Thr	Ser	Val	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Glu	Pro	195	200	205
Ile	Pro	Ile	His	Tyr	Cys	Thr	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	210	215	220
Asn	Asp	Lys	Lys	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	225	230	235
Val	Gln	Cys	Thr	His	Gly	Ile	Arg	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	245	250	255
Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Val	Val	Ile	Arg	Ser	Glu	Asn	260	265	270
Phe	Thr	Asp	Asn	Ala	Lys	Thr	Ile	Ile	Val	Gln	Leu	Asn	Glu	Ser	Val	275	280	285
Glu	Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	His	290	295	300
Ile	Gly	Pro	Gly	Arg	Ala	Phe	Tyr	Ala	Thr	Gly	Glu	Ile	Ile	Gly	Asp	305	310	315
Ile	Arg	Gln	Ala	His	Cys	Asn	Leu	Ser	Arg	Ala	Lys	Trp	Asn	Asn	Thr	325	330	335

Leu	Lys	Gln	Val	Val	Thr	Lys	Leu	Arg	Glu	Gln	Phe	Asp	Asn	Lys	Thr		
			340					345					350				
Ile	Val	Phe	Asn	Pro	Ser	Ser	Gly	Gly	Asp	Pro	Glu	Ile	Val	Met	His		
		355					360					365					
Ser	Phe	Asn	Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Thr	Gln	Leu		
	370					375					380						
Phe	Asn	Ser	Thr	Trp	Asn	Gly	Thr	Trp	Asn	Asn	Thr	Glu	Gly	Asn	Ile		
385					390				395						400		
Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Glu	Val		
				405					410					415			
Gly	Lys	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Arg	Gly	Gln	Ile	Arg	Cys	Ser		
			420					425					430				
Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Asn	Asn	Glu		
	435						440					445					
Thr	Glu	Ile	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg		
	450					455					460						
Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	Val		
465					470					475					480		
Ala	Pro	Thr	Lys	Ala	Lys	Arg	Arg	Val	Val	Gln	Arg	Glu	Lys	Arg	Ala		
			485					490						495			
Val	Gly	Ile	Gly	Ala	Met	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser		
		500						505					510				
Thr	Met	Gly	Ala	Ala	Ser	Met	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu		
	515						520					525					
Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Asn	Asn	Leu	Leu	Arg	Ala	Ile	Glu		
	530					535					540						
Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu		
545					550					555					560		
Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Arg	Asp	Gln	Gln	Leu		
			565						570					575			
Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Thr	Val		
		580						585					590				
Pro	Trp	Asn	Ala	Ser	Trp	Ser	Asn	Lys	Ser	Leu	Asp	Glu	Ile	Trp	Asn		
		595					600					605					
Asn	Met	Thr	Trp	Met	Glu	Trp	Glu	Arg	Glu	Ile	Asp	Asn	Tyr	Thr	Gly		
	610					615					620						
Leu	Ile	Tyr	Thr	Leu	Ile	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn		
625					630					635					640		

Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu Trp Asn Trp
 645 650 655
 Phe Asp Ile Thr Asn Trp Leu Trp Tyr Ile Lys Ile Phe Ile Met Ile
 660 665 670
 Val Gly Gly Leu Val Gly Leu Arg Ile Val Phe Ala Val Leu Ser Ile
 675 680 685
 Val Asn Arg Val Arg Gln Gly Tyr Ser Pro Leu Ser Phe Gln Thr Arg
 690 695 700
 Leu Pro Ala Pro Arg Gly Pro Asp Arg Pro Glu Gly Ile Glu Glu Glu
 705 710 715 720
 Gly Gly Glu Arg Asp Arg Asp Arg Ser Gly Arg Leu Val Asn Gly Phe
 725 730 735
 Leu Ala Leu Ile Trp Asp Asp Leu Arg Ser Leu Cys Leu Phe Ser Tyr
 740 745 750
 His Arg Leu Arg Asp Leu Leu Leu Ile Val Ala Arg Ile Val Glu Leu
 755 760 765
 Leu Gly Arg Arg Gly Trp Glu Ala Leu Lys Tyr Trp Trp Asn Leu Leu
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 Gln Tyr Trp Ser Gln Glu Leu Lys Asn Ser Ala Val Ser Leu Leu Asn
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 Ala Thr Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Val Ile Glu Val
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 Gln Gly Leu Glu Arg Ala Leu Leu
 835 840

<210> 78

<211> 835

<212> PRT

<213> Human immunodeficiency virus

<400> 78

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 Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Lys
 35 40 45
 Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Lys Glu Val

50					55					60					
His	Asn	Val	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro
65					70					75					80
Gln	Glu	Ile	Val	Leu	Glu	Asn	Val	Thr	Glu	Asn	Phe	Asn	Met	Trp	Lys
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Asn	Asp	Met	Val	Asp	Gln	Met	His	Glu	Asp	Ile	Ile	Ser	Leu	Trp	Asp
			100					105					110		
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu
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Asn	Cys	Thr	Asn	Ala	Thr	Asn	Ala	Thr	Asn	Thr	Met	Gly	Glu	Ile	Lys
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Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	Glu	Leu	Arg	Asp	Lys	Lys	Gln	Lys
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Val	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Ile	Val	Pro	Leu	Asn	Glu	Asn
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Cys	Pro	Lys	Val	Ser	Phe	Asp	Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro
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Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Leu	Thr	Asn	Asn	Ala	Lys	Thr	Ile
			260					265					270		
Ile	Val	His	Leu	Asn	Glu	Ser	Val	Glu	Ile	Val	Cys	Thr	Arg	Pro	Asn
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305					310					315					320
Ser	Glu	Asp	Lys	Trp	Asn	Lys	Thr	Leu	Gln	Lys	Val	Ser	Lys	Lys	Leu
				325					330					335	
Lys	Glu	His	Phe	Pro	Asn	Lys	Thr	Ile	Lys	Phe	Glu	Pro	Ser	Ser	Gly
		340						345					350		
Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Arg	Gly	Glu	Phe

355								360								365
Phe	Tyr	Cys	Asn	Thr	Ser	Lys	Leu	Phe	Asn	Ser	Thr	Tyr	Asn	Ser	Thr	
370						375					380					
Asn	Ser	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	
385					390					395					400	
Trp	Gln	Glu	Val	Gly	Arg	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Ala	Gly	Asn	
				405					410					415		
Ile	Thr	Cys	Lys	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly	
			420					425					430			
Gly	Lys	Asn	Asn	Thr	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	
		435					440					445				
Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Glu	Ile	Lys	
	450					455					460					
Pro	Leu	Gly	Ile	Ala	Pro	Thr	Lys	Ala	Lys	Arg	Arg	Val	Val	Glu	Arg	
465					470					475					480	
Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	Val	Phe	Leu	Gly	Phe	Leu	Gly	
				485					490					495		
Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Ile	Thr	Leu	Thr	Val	Gln	
			500					505					510			
Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu	Leu	
		515					520						525			
Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Met	Leu	Gln	Leu	Thr	Val	Trp	Gly	
	530					535					540					
Ile	Lys	Gln	Leu	Gln	Thr	Arg	Val	Leu	Ala	Ile	Glu	Arg	Tyr	Leu	Lys	
545					550					555					560	
Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	
			565						570					575		
Thr	Thr	Ala	Val	Pro	Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Gln	Glu	
			580					585					590			
Asp	Ile	Trp	Asp	Asn	Met	Thr	Trp	Met	Gln	Trp	Asp	Arg	Glu	Ile	Ser	
	595						600					605				
Asn	Tyr	Thr	Asp	Thr	Ile	Tyr	Arg	Leu	Leu	Glu	Asp	Ser	Gln	Asn	Gln	
	610					615					620					
Gln	Glu	Lys	Asn	Glu	Lys	Asp	Leu	Leu	Ala	Leu	Asp	Ser	Trp	Lys	Asn	
625					630					635					640	
Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Asn	Trp	Leu	Trp	Tyr	Ile	Lys	Ile	
				645					650					655		
Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile	Gly	Leu	Arg	Ile	Ile	Phe	Ala	

660	665	670
Val Leu Ser Ile Val Asn Arg	Val Arg Gln Gly Tyr Ser Pro Leu Ser	
675	680	685
Phe Gln Thr Leu Thr Pro Asn Pro Arg Gly Pro Asp Arg Leu Gly Arg		
690	695	700
Ile Glu Glu Glu Gly Gly Glu Gln Asp Arg Asp Arg Ser Ile Arg Leu		
705	710	715
Val Ser Gly Phe Leu Ala Leu Ala Trp Asp Asp Leu Arg Ser Leu Cys		
725	730	735
Leu Phe Ser Tyr His Arg Leu Arg Asp Phe Ile Leu Ile Ala Ala Arg		
740	745	750
Ala Val Glu Leu Leu Gly Arg Ser Ser Leu Arg Gly Leu Gln Arg Gly		
755	760	765
Trp Glu Ala Leu Lys Tyr Leu Gly Ser Leu Val Gln Tyr Trp Gly Leu		
770	775	780
Glu Leu Lys Lys Ser Ala Ile Ser Leu Leu Asp Thr Ile Ala Ile Ala		
785	790	795
Val Ala Glu Gly Thr Asp Arg Ile Ile Glu Leu Ile Gln Arg Ile Cys		
805	810	815
Arg Ala Ile Arg Asn Ile Pro Arg Arg Ile Arg Gln Gly Phe Glu Ala		
820	825	830
Ala Leu Gln		
835		

<210> 79
 <211> 2523
 <212> DNA
 <213> Human immunodeficiency virus

<400> 79

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gtgcccgtgt	ggaaggaggc	caccaccacc	ctgttctgcg	cctccgacgc	caaggcctac	180
gagaccgagg	tgcaaacgt	gtgggcccacc	cagcctgcg	tgcccaccga	ccccaacccc	240
caggaggtgg	tgctggagaa	cgtgaccgag	aacttcaaca	tgtggaagaa	caacatggtg	300
gagcagatgc	acgaggacat	catctccctg	tgggaccagt	ccctgaagcc	ctgcgtgaag	360
ctgaccccc	tgtgcgtgac	cctgaactgc	accgacctgc	tgaacgccac	caacaccaac	420
tccaccaaca	tgtaccgctg	gcgcggcgag	atcaagaact	gctccttcaa	catcaccacc	480
tccatccgcg	acaagatgca	gaaggagtac	gccctgttct	acaagctgga	cgtggtgccc	540
atcgacaaca	acacctccta	ccgcctgata	aactgcaaca	cctccgtgat	caccacggcc	600
tgccccaagg	tgctcttcga	gcccaccccc	atccactact	gcacccccgc	cggcttcgcc	660
atcctgaagt	gcaacgacaa	gaagttcaac	ggcaccggcc	cctgcaagaa	cgtgtccacc	720
gtgcagtgca	cccacggcat	ccgccccgtg	gtgtccaccc	agctgctgct	gaacggctcc	780
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atcgtgcagc	tgaacgagtc	cgtggagatc	aactgcaccc	gccccaacaa	caacacccgc	900

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atccgccagg	cccactgcaa	cctgtcccgc	gccaaagtga	acaacaccct	gaagcaggtg	1020
gtgaccaagc	tgcgcgagca	gttcgacaac	aagaccatcg	tgttcaaccc	ctcctccggc	1080
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aactacaccg	gcctgatcta	caccctgatc	gaggagtccc	agaaccagca	ggagaagaac	1920
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atcgtggccc	gcacgtgga	gctgctgggc	cgccgcgggt	gggagggcct	gaagtactgg	2340
tggaacctgc	tgagctactg	gtcccaggag	ctgaagaact	ccgcctgtgc	cctgctgaac	2400
gccaccgcca	tcgcctgggc	cgagggcacc	gaccgcgtga	tcgaggtggg	gcagcgcgcc	2460
tgccgcgcca	tcctgcacat	cccccgcggc	atccgccagg	gcctggagcg	cgccctgctg	2520
taa						2523

<210> 80

<211> 2508

<212> DNA

<213> Human immunodeficiency virus

<400> 80

atgcgcgtgc	gcggcaccct	gcgcaactgc	cagcagtggt	ggatctgggg	catcctgggc	60
ttctggatgc	tgatgatctg	caacgtgggtg	ggcaacctgt	gggtgaccgt	gtactacggc	120
gtgcccgtgt	ggaaggaggc	caagaccacc	ctgttctgcg	cctccgacgc	caaggcctac	180
gagaaggagg	tgacaaactg	gtgggccacc	cagccctgcg	tgcccaccga	ccccaacccc	240
caggagatcg	tgctggagaa	cgtgaccgag	aacttcaaca	tgtggaagaa	cgacatgggtg	300
gaccagatgc	acgaggacat	catctccctg	tgggaccagt	ccctgaagcc	ctgctggaag	360
ctgaccccc	tgtgctgac	cctgaactgc	accaacgcca	ccaacgccac	caacaccatg	420
ggcgagatca	agaactgctc	cttcaacatc	accaccgagc	tgcgcgacaa	gaagcagaag	480
gtgtacgccc	tgttctaccg	cctggacatc	gtgcccctga	acgagaacaa	ctcctaccgc	540
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cccgtgggtg	ccaccagct	gctgctgaac	ggctccctgg	ccgaggagga	gatcatcatc	780
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gagatcgtgt	gcacccgccc	caacaacaac	accgcgaagt	ccatccgcat	cggccccggc	900
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tccgaggaca	agtggaacaa	gaccctgcag	aaggtgtcca	agaagctgaa	ggagcacttc	1020
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tccttcaact	gccgcggcga	gttcttctac	tgcaaacacct	ccaagctgtt	caactccacc	1140
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tccaacatca cccggcctgct gctgacccgc gacggcggca agaacaacac cgagaccttc 1320
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aacatcccc cccgcatccc ccagggttc gagggcgccc tgcagtaa 2508

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<210> 81

<211> 835

<212> PRT

<213> Human immunodeficiency virus

<400> 81

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Met Arg Val Met Gly Ile Leu Arg Asn Cys Gln Gln Trp Trp Ile Trp
  1             5             10             15

```

```

Gly Ile Leu Gly Phe Trp Met Leu Met Ile Cys Asn Val Val Gly Asn
      20             25             30

```

```

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Lys
      35             40             45

```

```

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Arg Glu Val
      50             55             60

```

```

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
      65             70             75             80

```

```

Gln Glu Met Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
      85             90             95

```

```

Asn Asp Met Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
     100             105             110

```

```

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
     115             120             125

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```

Asn Cys Thr Asn Ala Thr Asn Ala Thr Asn Thr Met Gly Glu Met Lys
     130             135             140

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```

Asn Cys Ser Phe Asn Ile Thr Thr Glu Leu Arg Asp Lys Lys Gln Lys

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145					150					155				160	
Val	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Ile	Val	Pro	Leu	Asn	Asp	Asn
				165					170					175	
Asn	Ser	Tyr	Arg	Leu	Ile	Asn	Cys	Asn	Thr	Ser	Ala	Ile	Thr	Gln	Ala
			180					185					190		
Cys	Pro	Lys	Val	Ser	Phe	Asp	Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro
		195					200					205			
Ala	Gly	Tyr	Ala	Ile	Leu	Lys	Cys	Asn	Asn	Lys	Thr	Phe	Asn	Gly	Thr
	210					215					220				
Gly	Pro	Cys	Asn	Asn	Val	Ser	Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Lys
225					230					235					240
Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu
				245					250					255	
Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Leu	Thr	Asp	Asn	Ala	Lys	Thr	Ile
			260					265					270		
Ile	Val	His	Leu	Asn	Glu	Ser	Val	Glu	Ile	Val	Cys	Thr	Arg	Pro	Asn
		275					280					285			
Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	Gly	Pro	Gly	Gln	Thr	Phe	Tyr
	290					295					300				
Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	Cys	Asn	Ile
305					310					315					320
Ser	Glu	Glu	Lys	Trp	Asn	Lys	Thr	Leu	Gln	Arg	Val	Gly	Glu	Lys	Leu
			325						330					335	
Lys	Glu	His	Phe	Pro	Asn	Lys	Thr	Ile	Lys	Phe	Ala	Pro	Ser	Ser	Gly
			340					345					350		
Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Arg	Gly	Glu	Phe
	355						360					365			
Phe	Tyr	Cys	Asn	Thr	Ser	Arg	Leu	Phe	Asn	Ser	Thr	Tyr	Asn	Ser	Lys
	370					375					380				
Asn	Ser	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met
385					390					395					400
Trp	Gln	Gly	Val	Gly	Arg	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Ala	Gly	Asn
				405					410					415	
Ile	Thr	Cys	Lys	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly
			420					425					430		
Gly	Lys	Asn	Asn	Thr	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg
		435					440					445			
Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Glu	Ile	Lys

450					455					460					
Pro	Leu	Gly	Ile	Ala	Pro	Thr	Glu	Ala	Lys	Arg	Arg	Val	Val	Glu	Arg
465					470					475					480
Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	Val	Phe	Leu	Gly	Phe	Leu	Gly
				485					490						495
Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Ile	Thr	Leu	Thr	Val	Gln
			500					505					510		
Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu	Leu
		515					520					525			
Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Met	Leu	Gln	Leu	Thr	Val	Trp	Gly
		530					535					540			
Ile	Lys	Gln	Leu	Gln	Thr	Arg	Val	Leu	Ala	Ile	Glu	Arg	Tyr	Leu	Lys
545							550					555			560
Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys
			565						570					575	
Thr	Thr	Ala	Val	Pro	Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Gln	Glu
			580					585					590		
Glu	Ile	Trp	Asp	Asn	Met	Thr	Trp	Met	Gln	Trp	Asp	Arg	Glu	Ile	Ser
		595						600				605			
Asn	Tyr	Thr	Asp	Thr	Ile	Tyr	Arg	Leu	Leu	Glu	Asp	Ser	Gln	Asn	Gln
		610					615					620			
Gln	Glu	Lys	Asn	Glu	Gln	Asp	Leu	Leu	Ala	Leu	Asp	Ser	Trp	Glu	Asn
625							630					635			640
Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Asn	Trp	Leu	Trp	Tyr	Ile	Lys	Ile
				645					650					655	
Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile	Gly	Leu	Arg	Ile	Ile	Phe	Ala
			660					665					670		
Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg	Gln	Gly	Tyr	Ser	Pro	Leu	Ser
		675					680					685			
Phe	Gln	Thr	Leu	Thr	Pro	Asn	Pro	Arg	Gly	Pro	Asp	Arg	Leu	Gly	Arg
		690					695					700			
Ile	Glu	Glu	Glu	Gly	Gly	Glu	Gln	Asp	Arg	Asp	Arg	Ser	Ile	Arg	Leu
705							710					715			720
Val	Ser	Gly	Phe	Leu	Ala	Leu	Ala	Trp	Asp	Asp	Leu	Arg	Ser	Leu	Cys
				725					730					735	
Leu	Phe	Ser	Tyr	His	Arg	Leu	Arg	Asp	Phe	Ile	Leu	Ile	Ala	Ala	Arg
			740					745					750		
Ala	Val	Glu	Leu	Leu	Gly	Arg	Ser	Ser	Leu	Arg	Gly	Leu	Gln	Arg	Gly

755	760	765
Trp Glu Ala Leu Lys Tyr Leu Gly Ser Leu Val Gln Tyr Trp Gly Leu		
770	775	780
Glu Leu Lys Lys Ser Ala Ile Ser Leu Leu Asp Thr Ile Ala Ile Ala		
785	790	795
Val Ala Glu Gly Thr Asp Arg Ile Ile Glu Leu Ile Gln Arg Ile Cys		
	805	810
Arg Ala Ile Arg Asn Ile Pro Arg Arg Ile Arg Gln Gly Phe Glu Ala		
	820	825
		830
Ala Leu Leu		
835		

<210> 82
 <211> 840
 <212> PRT
 <213> Human immunodeficiency virus

<400> 82
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Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Thr
35 40 45
Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ser Tyr Lys Thr Glu Ala
50 55 60
His Asn Ile Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
65 70 75 80
Gln Glu Ile Glu Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
85 90 95
Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
100 105 110
Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
115 120 125
Asn Cys Thr Asp Val Lys Arg Asn Asn Thr Ser Asn Asp Thr Asn Glu
130 135 140
Gly Glu Met Lys Asn Cys Ser Phe Asn Ile Thr Thr Glu Ile Arg Asp
145 150 155 160
Lys Lys Lys Gln Val His Ala Leu Phe Tyr Lys Leu Asp Val Val Pro
165 170 175

Ile	Asp	Asp	Asn	Asn	Ser	Asn	Thr	Ser	Tyr	Arg	Leu	Ile	Asn	Cys	Asn
			180					185					190		
Thr	Ser	Ala	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Thr	Phe	Glu	Pro	Ile
		195					200					205			
Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Lys
	210					215					220				
Asp	Lys	Lys	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val
225					230					235					240
Gln	Cys	Thr	His	Gly	Ile	Arg	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu
				245					250					255	
Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Leu
			260					265					270		
Thr	Asn	Asn	Ala	Lys	Ile	Ile	Ile	Val	Gln	Leu	Asn	Glu	Ser	Val	Thr
			275				280					285			
Ile	Asn	Cys	Thr	Arg	Pro	Tyr	Asn	Asn	Thr	Arg	Gln	Arg	Thr	Pro	Ile
	290					295					300				
Gly	Pro	Gly	Gln	Ala	Leu	Tyr	Thr	Thr	Arg	Ile	Lys	Gly	Asp	Ile	Arg
305					310					315					320
Gln	Ala	His	Cys	Asn	Ile	Ser	Arg	Ala	Glu	Trp	Asn	Lys	Thr	Leu	Gln
				325					330					335	
Gln	Val	Ala	Lys	Lys	Leu	Gly	Asp	Leu	Leu	Asn	Lys	Thr	Thr	Ile	Ile
			340					345					350		
Phe	Lys	Pro	Ser	Ser	Gly	Gly	Asp	Pro	Glu	Ile	Thr	Thr	His	Ser	Phe
		355					360					365			
Asn	Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Arg	Leu	Phe	Asn
	370					375					380				
Ser	Thr	Trp	Asn	Asn	Thr	Lys	Trp	Asn	Ser	Thr	Gly	Lys	Ile	Thr	Leu
385					390					395					400
Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Gly	Val	Gly	Lys
				405				410						415	
Ala	Met	Tyr	Ala	Pro	Pro	Ile	Glu	Gly	Leu	Ile	Lys	Cys	Ser	Ser	Asn
			420					425					430		
Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Ala	Asn	Asn	Ser	His
		435					440					445			
Asn	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg
	450					455					460				
Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	Val
465					470					475					480

Ala	Pro	Thr	Arg	Ala	Lys	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	485	490	495
Ile	Gly	Leu	Gly	Ala	Met	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	500	505	510
Thr	Met	Gly	Ala	Ala	Ser	Met	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	515	520	525
Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Asn	Asn	Leu	Leu	Arg	Ala	Ile	Glu	530	535	540
Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	545	550	555
Gln	Ala	Arg	Ile	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	565	570	575
Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	His	Ile	Cys	Thr	Thr	Thr	Val	580	585	590
Pro	Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Leu	Asp	Glu	Ile	Trp	Asn	595	600	605
Asn	Met	Thr	Trp	Met	Glu	Trp	Glu	Arg	Glu	Ile	Asp	Asn	Tyr	Thr	Gly	610	615	620
Leu	Ile	Tyr	Ser	Leu	Ile	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	625	630	635
Glu	Gln	Glu	Leu	Leu	Glu	Leu	Asp	Lys	Trp	Ala	Ser	Leu	Trp	Asn	Trp	645	650	655
Phe	Ser	Ile	Thr	Gln	Trp	Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	660	665	670
Val	Gly	Gly	Leu	Ile	Gly	Leu	Arg	Ile	Val	Phe	Ala	Val	Leu	Ser	Leu	675	680	685
Val	Asn	Arg	Val	Arg	Gln	Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Thr	Leu	690	695	700
Leu	Pro	Ala	Pro	Arg	Gly	Pro	Asp	Arg	Pro	Glu	Gly	Ile	Glu	Glu	Glu	705	710	715
Gly	Gly	Glu	Gln	Gly	Arg	Gly	Arg	Ser	Ile	Arg	Leu	Val	Asn	Gly	Phe	725	730	735
Ser	Ala	Leu	Ile	Trp	Asp	Asp	Leu	Arg	Asn	Leu	Cys	Leu	Phe	Ser	Tyr	740	745	750
His	Arg	Leu	Arg	Asp	Leu	Ile	Leu	Ile	Ala	Ala	Arg	Ile	Val	Glu	Leu	755	760	765
Leu	Gly	Arg	Arg	Gly	Trp	Glu	Ala	Leu	Lys	Tyr	Leu	Trp	Asn	Leu	Leu	770	775	780

Gln Tyr Trp Ile Gln Glu Leu Lys Asn Ser Ala Ile Ser Leu Phe Asp
 785 790 795 800

Thr Thr Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Val Ile Glu Ile
 805 810 815

Val Gln Arg Ala Cys Arg Ala Ile Leu Asn Ile Pro Thr Arg Ile Arg
 820 825 830

Gln Gly Leu Glu Arg Ala Leu Leu
 835 840

<210> 83
 <211> 2508
 <212> DNA
 <213> Human immunodeficiency virus

<400> 83
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 gtgcccgtgt ggaaggaggc caagaccacc ctgttctgcg cctccgacgc caaggcctac 180
 gagcgcgagg tgcacaacgt gtgggccacc cagcctgcg tgcccaccga cccaacccc 240
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 ctgaccccc tgctgctgac cctgaactgc accaacgcca ccaacgccac caacaccatg 420
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gtggccgagg	gcaccgaccg	catcatcgag	ctgatccagc	gcattctgcc	cgccatccgc	2460
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<210> 84

<211> 2523

<212> DNA

<213> Human immunodeficiency virus

<400> 84

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ctgggcatgc	tgatgatctg	ctccgtggcc	gagaacctgt	gggtgaccgt	gtactacggc	120
gtgcccgtgt	ggaaggaggc	caccaccacc	ctgttctgcg	cctccgacgc	caagtcctac	180
aagaccgagg	cccacaacat	ctgggccacc	cacgcctgcg	tgccaccga	ccccaacccc	240
caggagatcg	agctggagaa	cgtgaccgag	aacttcaaca	tgtggaagaa	caacatggtg	300
gagcagatgc	acgaggacat	catctccctg	tgggaccagt	ccctgaagcc	ctgctggaag	360
ctgaccccc	tgtgctgtac	cctgaactgc	accgacgtga	agcgcaacaa	cacctccaac	420
gacaccaacg	agggcgagat	gaagaactgc	tccttcaaca	tcaccaccga	gatccgcgac	480
aagaagaagc	aggtgcacgc	cctgttctac	aagctggacg	tggtgcccac	cgacgacaac	540
aactccaaca	cctcctaccg	cctgatcaac	tgcaacacct	ccgccatcac	ccaggcctgc	600
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accaccgcca	tcgcccgtgg	cgagggcacc	gaccgcgtga	tcgagatcgt	gcagcgcgc	2460
tgccgcgcca	tcctgaacat	ccccacccgc	atccgcagcg	gcctggagcg	cgccctgctg	2520
taa						2523

<210> 85
<211> 832
<212> PRT
<213> Human immunodeficiency virus

<400> 85

Met	Arg	Val	Arg	Gly	Met	Gln	Arg	Asn	Trp	Gln	His	Leu	Gly	Lys	Trp
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Gly	Leu	Leu	Phe	Leu	Gly	Ile	Leu	Ile	Ile	Cys	Asn	Ala	Ala	Glu	Asn
			20					25					30		
Leu	Trp	Val	Thr	Val	Tyr	Tyr	Gly	Val	Pro	Val	Trp	Lys	Glu	Ala	Thr
		35					40					45			
Thr	Thr	Leu	Phe	Cys	Ala	Ser	Asp	Ala	Lys	Ser	Tyr	Glu	Lys	Glu	Val
		50				55					60				
His	Asn	Val	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro
65					70					75					80
Gln	Glu	Val	Val	Leu	Glu	Asn	Val	Thr	Glu	Asn	Phe	Asp	Met	Trp	Lys
				85					90					95	
Asn	Asn	Met	Val	Glu	Gln	Met	His	Thr	Asp	Ile	Ile	Ser	Leu	Trp	Asp
			100					105					110		
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu
		115					120					125			
Asn	Cys	Thr	Asp	Val	Asn	Ala	Thr	Asn	Asn	Asp	Thr	Asn	Asp	Asn	Lys
		130				135					140				
Thr	Gly	Ala	Ile	Gln	Asn	Cys	Ser	Phe	Asn	Met	Thr	Thr	Glu	Val	Arg
145					150					155					160
Asp	Lys	Lys	Leu	Lys	Val	His	Ala	Leu	Phe	Tyr	Lys	Leu	Asp	Ile	Val
			165					170						175	
Pro	Ile	Ser	Asn	Asn	Asn	Ser	Lys	Tyr	Arg	Leu	Ile	Asn	Cys	Asn	Thr
			180					185					190		
Ser	Thr	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Trp	Asp	Pro	Ile	Pro
		195					200					205			
Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Tyr	Ala	Ile	Leu	Lys	Cys	Asn	Asp
		210				215					220				
Lys	Arg	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val	Gln
225					230					235					240
Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn
			245						250					255	
Gly	Ser	Leu	Ala	Glu	Glu	Asp	Ile	Ile	Ile	Arg	Ser	Gln	Asn	Ile	Ser
			260					265					270		

Asp	Asn	Ala	Lys	Thr	Ile	Ile	Val	His	Leu	Asn	Glu	Ser	Val	Gln	Ile
	275						280					285			
Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	His	Leu	Gly
	290					295					300				
Pro	Gly	Gln	Ala	Phe	Tyr	Ala	Thr	Gly	Glu	Ile	Ile	Gly	Asp	Ile	Arg
305					310					315					320
Lys	Ala	His	Cys	Asn	Ile	Ser	Gly	Thr	Gln	Trp	Asn	Lys	Thr	Leu	Glu
				325					330					335	
Gln	Val	Lys	Ala	Lys	Leu	Lys	Ser	His	Phe	Pro	Asn	Lys	Thr	Ile	Lys
			340					345					350		
Phe	Asn	Ser	Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Met	His	Ser	Phe
	355						360					365			
Asn	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Gly	Leu	Phe	Asn
	370					375					380				
Asp	Thr	Gly	Ser	Asn	Gly	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln
385					390					395					400
Ile	Val	Asn	Met	Trp	Gln	Glu	Val	Gly	Arg	Ala	Met	Tyr	Ala	Ala	Pro
				405					410					415	
Ile	Ala	Gly	Asn	Ile	Thr	Cys	Asn	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu
			420					425					430		
Thr	Arg	Asp	Gly	Gly	Gln	Asn	Asn	Thr	Glu	Thr	Phe	Arg	Pro	Gly	Gly
	435						440					445			
Gly	Asn	Met	Lys	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val
	450					455					460				
Val	Glu	Ile	Glu	Pro	Leu	Gly	Val	Ala	Pro	Thr	Lys	Ala	Lys	Arg	Gln
465					470					475					480
Val	Val	Lys	Arg	Glu	Arg	Arg	Ala	Val	Gly	Ile	Gly	Ala	Val	Phe	Leu
				485					490					495	
Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Ile	Thr
			500					505					510		
Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln
		515					520					525			
Asn	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu	Leu	Gln	Leu
	530					535					540				
Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala	Val	Glu
545					550					555					560
Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Leu	Trp	Gly	Cys	Ser	Gly
				565					570					575	

Lys Leu Ile Cys Thr Thr Asn Val Pro Trp Asn Ser Ser Trp Ser Asn
 580 585 590
 Lys Ser Gln Asp Glu Ile Trp Asn Asn Met Thr Trp Met Glu Trp Glu
 595 600 605
 Lys Glu Ile Ser Asn Tyr Ser Asn Ile Ile Tyr Arg Leu Ile Glu Glu
 610 615 620
 Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu Ala Leu Asp
 625 630 635 640
 Lys Trp Ala Ser Leu Trp Asn Trp Phe Asp Ile Ser Asn Trp Leu Trp
 645 650 655
 Tyr Ile Lys Ile Phe Ile Met Ile Val Gly Gly Leu Ile Gly Leu Arg
 660 665 670
 Ile Val Phe Ala Val Leu Ser Ile Val Asn Arg Val Arg Lys Gly Tyr
 675 680 685
 Ser Pro Leu Ser Leu Gln Thr Leu Ile Pro Ser Pro Arg Glu Pro Asp
 690 695 700
 Arg Pro Glu Gly Ile Glu Glu Gly Gly Gly Glu Gln Gly Lys Asp Arg
 705 710 715 720
 Ser Val Arg Leu Val Asn Gly Phe Leu Ala Leu Val Trp Asp Asp Leu
 725 730 735
 Arg Asn Leu Cys Leu Phe Ser Tyr Arg His Leu Arg Asp Phe Ile Leu
 740 745 750
 Ile Ala Ala Arg Ile Val Asp Arg Gly Leu Arg Arg Gly Trp Glu Ala
 755 760 765
 Leu Lys Tyr Leu Gly Asn Leu Thr Gln Tyr Trp Ser Gln Glu Leu Lys
 770 775 780
 Asn Ser Ala Ile Ser Leu Leu Asn Thr Thr Ala Ile Val Val Ala Glu
 785 790 795 800
 Gly Thr Asp Arg Val Ile Glu Ala Leu Gln Arg Ala Gly Arg Ala Val
 805 810 815
 Leu Asn Ile Pro Arg Arg Ile Arg Gln Gly Leu Glu Arg Ala Leu Leu
 820 825 830

<210> 86

<211> 831

<212> PRT

<213> Human immunodeficiency virus

<400> 86

Met Arg Val Arg Glu Met Gln Arg Asn Trp Gln His Leu Gly Lys Trp
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Gly Leu Leu Phe Leu Gly Ile Leu Ile Ile Cys Asn Ala Ala Asp Asn
20 25 30

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Thr
35 40 45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Arg Glu Val
50 55 60

His Asn Val Trp Ala Thr Tyr Ala Cys Val Pro Thr Asp Pro Ser Pro
65 70 75 80

Gln Glu Leu Val Leu Gly Asn Val Thr Glu Asn Phe Asn Met Trp Lys
85 90 95

Asn Asn Met Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
100 105 110

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
115 120 125

Asn Cys Thr Asp Val Asn Val Thr Ile Asn Thr Thr Asn Val Thr Leu
130 135 140

Gly Glu Ile Lys Asn Cys Ser Phe Asn Ile Thr Thr Glu Ile Lys Asp
145 150 155 160

Lys Lys Lys Lys Glu Tyr Ala Leu Phe Tyr Arg Leu Asp Val Val Pro
165 170 175

Ile Asn Asn Ser Ile Val Tyr Arg Leu Ile Ser Cys Asn Thr Ser Thr
180 185 190

Val Thr Gln Ala Cys Pro Lys Val Ser Phe Glu Pro Ile Pro Ile His
195 200 205

Tyr Cys Ala Pro Ala Gly Phe Ala Ile Leu Lys Cys Asn Asp Lys Lys
210 215 220

Phe Asn Gly Thr Gly Leu Cys Arg Asn Val Ser Thr Val Gln Cys Thr
225 230 235 240

His Gly Ile Arg Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly Ser
245 250 255

Leu Ala Glu Glu Asp Ile Ile Ile Arg Ser Glu Asn Ile Ser Asp Asn
260 265 270

Thr Lys Thr Ile Ile Val Gln Phe Asn Arg Ser Val Glu Ile Asn Cys
275 280 285

Thr Arg Pro Asn Asn Asn Thr Arg Lys Ser Ile Arg Ile Gly Pro Gly
290 295 300

Arg	Ala	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Lys	Ala	305	310	315	320
Tyr	Cys	Asn	Ile	Asn	Arg	Thr	Leu	Trp	Asn	Glu	Thr	Leu	Lys	Lys	Val	325	330	335	
Ala	Glu	Glu	Phe	Lys	Asn	His	Phe	Asn	Ile	Thr	Val	Thr	Phe	Asn	Pro	340	345	350	
Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys	Arg	355	360	365	
Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Asp	Leu	Phe	Asn	Asn	Thr	Glu	370	375	380	
Val	Asn	Asn	Thr	Lys	Thr	Ile	Thr	Leu	Pro	Cys	Arg	Ile	Arg	Gln	Phe	385	390	395	400
Val	Asn	Met	Trp	Gln	Arg	Val	Gly	Arg	Ala	Met	Tyr	Ala	Pro	Pro	Ile	405	410	415	
Ala	Gly	Gln	Ile	Gln	Cys	Asn	Ser	Asn	Ile	Thr	Gly	Leu	Leu	Leu	Thr	420	425	430	
Arg	Asp	Gly	Gly	Lys	Asn	Gly	Ser	Glu	Thr	Leu	Arg	Pro	Gly	Gly	Gly	435	440	445	
Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	450	455	460	
Lys	Ile	Glu	Pro	Leu	Gly	Val	Ala	Pro	Thr	Lys	Ala	Lys	Arg	Gln	Val	465	470	475	480
Val	Gln	Arg	Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	Val	Leu	Leu	Gly	485	490	495	
Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Ile	Thr	Leu	500	505	510	
Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	515	520	525	
Asn	Leu	Leu	Lys	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr	530	535	540	
Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Ile	Leu	Ala	Val	Glu	Arg	545	550	555	560
Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	565	570	575	
Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro	Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	580	585	590	
Ser	Gln	Asp	Glu	Ile	Trp	Asp	Asn	Met	Thr	Trp	Met	Gln	Trp	Glu	Lys	595	600	605	

Glu Ile Ser Asn Tyr Thr Asp Thr Ile Tyr Arg Leu Ile Glu Asp Ala
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 Trp Asp Asn Leu Trp Ser Trp Phe Thr Ile Thr Asn Trp Leu Trp Tyr
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 Ser Ala Ile Ser Leu Leu Asp Thr Thr Ala Ile Ala Val Ala Glu Gly
 785 790 795 800
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<210> 87

<211> 2499

<212> DNA

<213> Human immunodeficiency virus

<400> 87

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<210> 88

<211> 2496

<212> DNA

<213> Human immunodeficiency virus

<400> 88

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<210> 89

<211> 842

<212> PRT

<213> Human immunodeficiency virus

<400> 89

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      20             25             30

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Glu Asp Ala Asp
      35             40             45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Ser Thr Glu Arg
      50             55             60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
      65             70             75             80

Gln Glu Ile Thr Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
      85             90             95

Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
      100            105            110

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Glu	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu	115	120	125	
Asn	Cys	Thr	Asp	Val	Asn	Val	Thr	Asn	Asn	Asn	Thr	Asn	Asn	Thr	Lys	130	135	140	
Lys	Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	Glu	Ile	Arg	Asp	145	150	155	160
Lys	Lys	Lys	Lys	Glu	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Val	Val	Pro	165	170	175	
Ile	Asn	Asp	Asn	Gly	Asn	Ser	Ser	Ile	Tyr	Arg	Leu	Ile	Asn	Cys	Asn	180	185	190	
Val	Ser	Thr	Ile	Lys	Gln	Ala	Cys	Pro	Lys	Val	Thr	Phe	Asp	Pro	Ile	195	200	205	
Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Arg	210	215	220	
Asp	Lys	Lys	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val	225	230	235	240
Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	245	250	255	
Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Ile	260	265	270	
Thr	Asp	Asn	Thr	Lys	Val	Ile	Ile	Val	Gln	Leu	Asn	Glu	Thr	Ile	Glu	275	280	285	
Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	290	295	300	
Gly	Pro	Gly	Gln	Ala	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	305	310	315	320
Arg	Gln	Ala	His	Cys	Asn	Val	Ser	Arg	Thr	Lys	Trp	Asn	Glu	Met	Leu	325	330	335	
Gln	Lys	Val	Lys	Ala	Gln	Leu	Lys	Lys	Ile	Phe	Asn	Lys	Ser	Ile	Thr	340	345	350	
Phe	Asn	Ser	Ser	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	355	360	365	
Asn	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Gly	Leu	Phe	Asn	370	375	380	
Asn	Ser	Leu	Leu	Asn	Ser	Thr	Asn	Ser	Thr	Ile	Thr	Leu	Pro	Cys	Lys	385	390	395	400
Ile	Lys	Gln	Ile	Val	Arg	Met	Trp	Gln	Arg	Val	Gly	Gln	Ala	Met	Tyr	405	410	415	

Ala	Pro	Pro	Ile	Ala	Gly	Asn	Ile	Thr	Cys	Arg	Ser	Asn	Ile	Thr	Gly	420	425	430
Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Asn	Asn	Asn	Thr	Glu	Thr	Phe	Arg	435	440	445
Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	450	455	460
Tyr	Lys	Ile	Val	Lys	Ile	Lys	Pro	Leu	Gly	Val	Ala	Pro	Thr	Arg	Ala	465	470	475
Arg	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Leu	Gly	Ala	485	490	495
Val	Leu	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	500	505	510
Ser	Ile	Thr	Leu	Thr	Val	Gln	Val	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	515	520	525
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Ala	Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	565	570	575
Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro	Trp	Asn	Thr	Ser	580	585	590
Trp	Ser	Asn	Lys	Ser	Tyr	Asn	Glu	Ile	Trp	Asp	Asn	Met	Thr	Trp	Ile	595	600	605
Glu	Trp	Glu	Arg	Glu	Ile	Ser	Asn	Tyr	Thr	Gln	Gln	Ile	Tyr	Ser	Leu	610	615	620
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Ala	Leu	Asp	Lys	Trp	Ala	Ser	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Lys	645	650	655
Trp	Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile	660	665	670
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Gln	Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Thr	Leu	Thr	His	His	Gln	Arg	690	695	700
Glu	Pro	Asp	Arg	Pro	Glu	Arg	Ile	Glu	Glu	Gly	Gly	Gly	Glu	Gln	Asp	705	710	715

Lys Asp Arg Ser Ile Arg Leu Val Ser Gly Phe Leu Ala Leu Ala Trp
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Asp Asp Leu Arg Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp
740 745 750

Phe Ile Leu Ile Ala Ala Arg Thr Val Glu Leu Leu Gly Arg Ser Ser
755 760 765

Leu Lys Gly Leu Arg Leu Gly Trp Glu Gly Leu Lys Tyr Leu Trp Asn
770 775 780

Leu Leu Leu Tyr Trp Gly Gln Glu Leu Lys Asn Ser Ala Ile Asn Leu
785 790 795 800

Leu Asp Thr Ile Ala Ile Ala Val Ala Asn Trp Thr Asp Arg Val Ile
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Ile Arg Gln Gly Leu Glu Arg Ala Leu Leu
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<210> 90

<211> 839

<212> PRT

<213> Human immunodeficiency virus

<400> 90

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Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Lys
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Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Thr Glu Lys
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His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
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Gln Glu Met Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Glu
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Asn Asp Met Val Glu Gln Met His Thr Asp Ile Ile Ser Leu Trp Asp
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Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
115 120 125

Asp Cys Ser Asn Val Asn Thr Thr Asn Ala Thr Asn Ser Arg Phe Asn
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Met	Gln	Glu	Glu	Leu	Thr	Asn	Cys	Ser	Phe	Asn	Val	Thr	Thr	Val	Ile	145	150	155	160
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Val	Pro	Ile	Asp	Asp	Asn	Asn	Ser	Tyr	Gln	Tyr	Arg	Leu	Ile	Asn	Cys	180	185	190	
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Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	210	215	220	
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Val	Gln	Cys	Thr	His	Gly	Ile	Arg	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	245	250	255	
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Ile	Ser	Asp	Asn	Thr	Lys	Asn	Ile	Ile	Val	Gln	Leu	Asn	Lys	Pro	Val	275	280	285	
Glu	Ile	Thr	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	His	290	295	300	
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Gly	Gln	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Lys	Gly	Asn	Ile	Thr	Cys	Val	420	425	430	
Ser	Asn	Ile	Thr	Gly	Leu	Ile	Leu	Thr	Phe	Asp	Glu	Gly	Asn	Asn	Thr	435	440	445	

Val	Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	450	455	460
Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	Val	Ala	465	470	475
Pro	Thr	Glu	Ala	Arg	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	485	490	495
Gly	Met	Gly	Ala	Phe	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	500	505	510
Met	Gly	Ala	Ala	Ser	Ile	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	515	520	525
Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Gln	Ala	530	535	540
Gln	Gln	His	Met	Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	545	550	555
Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	565	570	575
Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro	580	585	590
Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Leu	Asp	Glu	Ile	Trp	Asp	Asn	595	600	605
Met	Thr	Trp	Met	Glu	Trp	Asp	Lys	Gln	Ile	Asn	Asn	Tyr	Thr	Glu	Glu	610	615	620
Ile	Tyr	Arg	Leu	Leu	Glu	Val	Ser	Gln	Thr	Gln	Gln	Glu	Lys	Asn	Glu	625	630	635
Gln	Asp	Leu	Leu	Ala	Leu	Asp	Lys	Trp	Ala	Ser	Leu	Trp	Asn	Trp	Phe	645	650	655
Ser	Ile	Thr	Asn	Trp	Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	Val	660	665	670
Gly	Gly	Leu	Ile	Gly	Leu	Arg	Ile	Ile	Phe	Ala	Val	Leu	Ser	Ile	Val	675	680	685
Asn	Arg	Val	Arg	Gln	Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Thr	Leu	Ile	690	695	700
Pro	Asn	Pro	Arg	Gly	Pro	Asp	Arg	Pro	Glu	Gly	Ile	Glu	Glu	Glu	Gly	705	710	715
Gly	Glu	Gln	Asp	Arg	Asp	Arg	Ser	Val	Arg	Leu	Val	Asn	Gly	Phe	Leu	725	730	735
Pro	Leu	Val	Trp	Asp	Asp	Leu	Arg	Ser	Leu	Cys	Leu	Phe	Ser	Tyr	Arg	740	745	750

Leu Leu Arg Asp Leu Leu Leu Ile Val Val Arg Thr Val Glu Leu Leu
755 760 765

Gly Arg Arg Gly Arg Glu Ala Leu Lys Tyr Leu Trp Asn Leu Leu Gln
770 775 780

Tyr Trp Gly Gln Glu Leu Lys Asn Ser Ala Ile Asn Leu Leu Asn Thr
785 790 795 800

Thr Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Ile Ile Glu Ile Val
805 810 815

Gln Arg Ala Trp Arg Ala Ile Leu His Ile Pro Arg Arg Ile Arg Gln
820 825 830

Gly Phe Glu Arg Thr Leu Leu
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<210> 91

<211> 2529

<212> DNA

<213> Human immunodeficiency virus

<400> 91

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<210> 92

<211> 2520

<212> DNA

<213> Human immunodeficiency virus

<400> 92

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<210> 93
<211> 854
<212> PRT
<213> Human immunodeficiency virus

<400> 93
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Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Arg Asp Ala Asp
35 40 45
Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala His Glu Thr Glu Val
50 55 60
His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
65 70 75 80
Gln Glu Ile His Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
85 90 95
Asn Asn Met Val Glu Gln Met Gln Glu Asp Val Ile Ser Leu Trp Asp
100 105 110
Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
115 120 125
Asn Cys Thr Asn Ala Asn Leu Thr Asn Val Asn Asn Ile Thr Asn Val
130 135 140
Ser Asn Ile Ile Gly Asn Ile Thr Asn Glu Val Arg Asn Cys Ser Phe
145 150 155 160
Asn Met Thr Thr Glu Leu Arg Asp Lys Lys Gln Lys Val His Ala Leu
165 170 175
Phe Tyr Lys Leu Asp Ile Val Gln Ile Glu Asp Asn Asn Ser Tyr Arg
180 185 190
Leu Ile Asn Cys Asn Thr Ser Val Ile Lys Gln Ala Cys Pro Lys Ile
195 200 205
Ser Phe Asp Pro Ile Pro Ile His Tyr Cys Thr Pro Ala Gly Tyr Ala
210 215 220
Ile Leu Lys Cys Asn Asp Lys Asn Phe Asn Gly Thr Gly Pro Cys Lys
225 230 235 240

Asn	Val	Ser	Ser	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	245	250	255
Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile	260	265	270
Arg	Ser	Glu	Asn	Leu	Thr	Asn	Asn	Ala	Lys	Thr	Ile	Ile	Val	His	Leu	275	280	285
Asn	Lys	Ser	Val	Glu	Ile	Asn	Cys	Thr	Arg	Pro	Ser	Asn	Asn	Thr	Arg	290	295	300
Thr	Ser	Ile	Thr	Ile	Gly	Pro	Gly	Gln	Val	Phe	Tyr	Arg	Thr	Gly	Asp	305	310	315
Ile	Ile	Gly	Asp	Ile	Arg	Lys	Ala	Tyr	Cys	Glu	Ile	Asn	Gly	Thr	Lys	325	330	335
Trp	Asn	Glu	Val	Leu	Lys	Gln	Val	Thr	Glu	Lys	Leu	Lys	Glu	His	Phe	340	345	350
Asn	Asn	Lys	Thr	Ile	Ile	Phe	Gln	Pro	Pro	Ser	Gly	Gly	Asp	Leu	Glu	355	360	365
Ile	Thr	Met	His	His	Phe	Asn	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	370	375	380
Thr	Thr	Lys	Leu	Phe	Asn	Asn	Thr	Cys	Ile	Gly	Asn	Glu	Thr	Met	Glu	385	390	395
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Asn	Met	Trp	Gln	Gly	Ala	Gly	Gln	Ala	Met	Tyr	Ala	Pro	Pro	Ile	Ser	420	425	430
Gly	Arg	Ile	Asn	Cys	Val	Ser	Asn	Ile	Thr	Gly	Ile	Leu	Leu	Thr	Arg	435	440	445
Asp	Gly	Gly	Ala	Asn	Asn	Thr	Asn	Glu	Thr	Phe	Arg	Pro	Gly	Gly	Gly	450	455	460
Asn	Ile	Lys	Asp	Asn	Trp	Arg	Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	465	470	475
Gln	Ile	Glu	Pro	Leu	Gly	Ile	Ala	Pro	Thr	Arg	Ala	Lys	Arg	Arg	Val	485	490	495
Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Ile	Gly	Ala	Met	Ile	Phe	Gly	500	505	510
Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Ile	Thr	Leu	515	520	525
Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	530	535	540

Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr	545	550	555	560
Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	565	570	575	
Tyr	Leu	Lys	Asp	Gln	Lys	Phe	Leu	Gly	Leu	Trp	Gly	Cys	Ser	Gly	Lys	580	585	590	
Ile	Ile	Cys	Thr	Thr	Ala	Val	Pro	Trp	Asn	Ser	Thr	Trp	Ser	Asn	Arg	595	600	605	
Ser	Phe	Glu	Glu	Ile	Trp	Asn	Asn	Met	Thr	Trp	Ile	Glu	Trp	Glu	Arg	610	615	620	
Glu	Ile	Ser	Asn	Tyr	Thr	Asn	Gln	Ile	Tyr	Glu	Ile	Leu	Thr	Glu	Ser	625	630	635	640
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Trp	Ala	Ser	Leu	Trp	Asn	Trp	Phe	Asp	Ile	Thr	Asn	Trp	Leu	Trp	Tyr	660	665	670	
Ile	Lys	Ile	Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile	Gly	Leu	Arg	Ile	675	680	685	
Ile	Phe	Ala	Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg	Gln	Gly	Tyr	Ser	690	695	700	
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Pro	Glu	Arg	Ile	Glu	Glu	Gly	Gly	Gly	Glu	Gln	Gly	Arg	Asp	Arg	Ser	725	730	735	
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Ser	Leu	Cys	Leu	Phe	Ser	Tyr	His	Arg	Leu	Arg	Asp	Phe	Ile	Leu	Ile	755	760	765	
Ala	Ala	Arg	Thr	Val	Glu	Leu	Leu	Gly	His	Ser	Ser	Leu	Lys	Gly	Leu	770	775	780	
Arg	Arg	Gly	Trp	Glu	Gly	Leu	Lys	Tyr	Leu	Gly	Asn	Leu	Leu	Leu	Tyr	785	790	795	800
Trp	Gly	Gln	Glu	Leu	Lys	Ile	Ser	Ala	Ile	Ser	Leu	Leu	Asp	Ala	Thr	805	810	815	
Ala	Ile	Ala	Val	Ala	Gly	Trp	Thr	Asp	Arg	Val	Ile	Glu	Val	Ala	Gln	820	825	830	
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Leu Glu Arg Ala Leu Leu
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<210> 94

<211> 844

<212> PRT

<213> Human immunodeficiency virus

<400> 94

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Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val His
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Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro Gln
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Glu Ile His Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys Asn
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Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp Gln
100 105 110

Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu Asp
115 120 125

Cys His Asn Asn Ile Thr Asn Ser Asn Thr Thr Asn Asn Asn Ala Gly
130 135 140

Glu Ile Lys Asn Cys Ser Phe Asn Met Thr Thr Glu Leu Arg Asp Lys
145 150 155 160

Lys Gln Lys Val Tyr Ala Leu Phe Tyr Arg Leu Asp Val Val Gln Ile
165 170 175

Asn Lys Asn Asn Ser Gln Tyr Arg Leu Ile Asn Cys Asn Thr Ser Ala
180 185 190

Ile Thr Gln Ala Cys Pro Lys Val Ser Phe Glu Pro Ile Pro Ile His
195 200 205

Tyr Cys Ala Pro Ala Gly Phe Ala Ile Leu Lys Cys Asn Asp Lys Glu
210 215 220

Phe Asn Gly Thr Gly Pro Cys Lys Asn Val Ser Thr Val Gln Cys Thr
225 230 235 240

His Gly Ile Lys Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly Ser

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Gly	Ala	Val	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly				
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Val	Leu	Ala	Leu	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile
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Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Thr	Val	Pro	Trp	Asn
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Arg	Asp	Phe	Val	Leu	Ile	Ala	Ala	Arg	Thr	Val	Glu	Leu	Leu	Gly	His
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Ser	Ser	Leu	Lys	Gly	Leu	Arg	Leu	Gly	Trp	Glu	Ala	Leu	Lys	Tyr	Leu
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Gly	Asn	Leu	Leu	Ser	Tyr	Trp	Gly	Gln	Glu	Leu	Lys	Asn	Ser	Ala	Ile
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Asn	Leu	Leu	Asp	Thr	Ile	Ala	Ile	Ala	Val	Ala	Asn	Trp	Thr	Asp	Arg
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Val	Ile	Glu	Ile	Gly	Gln	Arg	Ala	Gly	Arg	Ala	Ile	Leu	Asn	Ile	Pro
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<210> 95
<211> 2565
<212> DNA
<213> Human immunodeficiency virus

<400> 95
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<210> 96
<211> 2535
<212> DNA
<213> Human immunodeficiency virus

<400> 96

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<210> 97

<211> 840

<212> PRT

<213> Human immunodeficiency virus

<400> 97

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 Phe Cys Ala Ser Asp Ala Lys Ala Tyr Ser Lys Glu Val His Asn Val
 50 55 60
 Trp Ala Thr Tyr Ala Cys Val Pro Thr Asp Pro Ser Pro Gln Glu Ile
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 Pro Leu Glu Asn Val Thr Glu Asn Phe Asn Met Gly Lys Asn Asn Met
 85 90 95
 Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp Gln Ser Leu
 100 105 110
 Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu Asn Cys Thr
 115 120 125
 Asp Leu Lys Lys Asn Val Thr Ser Thr Asn Thr Ser Ser Ile Lys Met
 130 135 140
 Met Glu Met Lys Asn Cys Ser Phe Asn Ile Thr Thr Asp Leu Arg Asp
 145 150 155 160
 Lys Val Lys Lys Glu Tyr Ala Leu Phe Tyr Lys Leu Asp Val Val Gln
 165 170 175
 Ile Asp Asn Asp Ser Tyr Arg Leu Ile Ser Cys Asn Thr Ser Val Val
 180 185 190
 Thr Gln Ala Cys Pro Lys Ile Ser Phe Glu Pro Ile Pro Ile His Tyr
 195 200 205
 Cys Ala Pro Ala Gly Phe Ala Ile Leu Lys Cys Asn Asp Lys Lys Phe
 210 215 220
 Asn Gly Thr Gly Pro Cys Thr Asn Val Ser Thr Val Gln Cys Thr His
 225 230 235 240
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 245 250 255
 Ala Glu Glu Glu Val Val Ile Arg Ser Val Asn Phe Thr Asp Asn Thr
 260 265 270
 Lys Thr Ile Ile Val Gln Leu Lys Glu Pro Val Glu Ile Asn Cys Thr
 275 280 285
 Arg Pro Asn Asn Asn Thr Arg Lys Gly Ile His Ile Gly Pro Gly Arg
 290 295 300
 Ala Phe Tyr Ala Thr Gly Asp Ile Ile Gly Asp Ile Arg Gln Ala His
 305 310 315 320
 Cys Asn Ile Ser Ile Thr Lys Trp Asn Asn Thr Leu Lys Gln Ile Val
 325 330 335

Ile	Lys	Leu	Arg	Lys	Gln	Phe	Gly	Asn	Lys	Thr	Ile	Val	Phe	Asn	Gln	
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Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Thr	Lys	Leu	Phe	Asn	Ser	Thr	Trp	
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Pro	Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Glu	Val	Gly	Lys	
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Ala	Met	Tyr	Ala	Pro	Pro	Ile	Ala	Gly	Gln	Ile	Arg	Cys	Ser	Ser	Asn	
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Thr	Glu	Ile	Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	
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Ser	Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	Val	
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Val	Gly	Ile	Gly	Ala	Val	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	
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Ala	Gln	Gln	His	Leu	Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	
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Gln	Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	
			565						570					575		
Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Ala	Val	
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	610					615					620					
Leu	Ile	Tyr	Asn	Leu	Ile	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	
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 Phe Asp Ile Ser Lys Trp Leu Trp Tyr Ile Lys Ile Phe Ile Met Ile
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 675 680 685
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 690 695 700
 Leu Pro Thr Gln Arg Gly Pro Asp Arg Pro Glu Gly Ile Glu Glu Glu
 705 710 715 720
 Gly Gly Glu Arg Asp Arg Asp Thr Ser Ile Arg Leu Val Asn Gly Phe
 725 730 735
 Leu Ala Leu Ile Trp Asp Asp Leu Arg Ser Leu Cys Leu Phe Ile Tyr
 740 745 750
 His His Leu Arg Asp Leu Leu Leu Ile Ala Ala Arg Ile Val Glu Leu
 755 760 765
 Leu Gly Arg Arg Gly Trp Glu Ala Leu Lys Tyr Trp Trp Asn Leu Leu
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 Gln Tyr Trp Ile Gln Glu Leu Lys Ser Ser Ala Ile Asn Leu Ile Asp
 785 790 795 800
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 Gln Gly Ala Glu Lys Ala Leu Gln
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<210> 98

<211> 848

<212> PRT

<213> Human immunodeficiency virus

<400> 98

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 Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Arg Asp Ala Glu
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 Thr Thr Pro Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Lys Glu Val
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His	Asn	Ile	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro	65	70	75	80
Gln	Glu	Ile	Ala	Leu	Lys	Asn	Val	Thr	Glu	Asn	Phe	Asn	Met	Trp	Lys	85	90	95	
Asn	Asn	Met	Val	Glu	Gln	Met	His	Glu	Asp	Ile	Ile	Ser	Leu	Trp	Asp	100	105	110	
Glu	Gly	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Ala	Leu	115	120	125	
Asn	Cys	Ser	Asn	Ala	Thr	Ile	Asn	Asn	Ser	Thr	Lys	Thr	Asn	Ser	Thr	130	135	140	
Glu	Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	Glu	Ile	Arg	Asp	145	150	155	160
Lys	Lys	Lys	Lys	Glu	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Ile	Val	Pro	165	170	175	
Ile	Asn	Asp	Ser	Ala	Asn	Asn	Asn	Ser	Ile	Asn	Ser	Glu	Tyr	Met	Leu	180	185	190	
Ile	Asn	Cys	Asn	Ala	Ser	Thr	Ile	Lys	Gln	Ala	Cys	Pro	Lys	Val	Thr	195	200	205	
Phe	Glu	Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	210	215	220	
Leu	Lys	Cys	Asn	Asp	Lys	Asn	Phe	Thr	Gly	Leu	Gly	Pro	Cys	Thr	Asn	225	230	235	240
Val	Ser	Ser	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	245	250	255	
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Lys	Ala	Val	Lys	Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	290	295	300	
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Ile	Gly	Asp	Ile	Arg	Gln	Ala	His	Cys	Asn	Ile	Ser	Gly	Asn	Asp	Trp	325	330	335	
Asn	Glu	Thr	Leu	Gln	Lys	Ile	Val	Glu	Glu	Leu	Arg	Lys	His	Phe	Pro	340	345	350	
Asn	Lys	Thr	Ile	Ile	Phe	Ala	Pro	Ser	Ala	Gly	Gly	Asp	Leu	Glu	Ile	355	360	365	

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Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro	Trp	Asn	Ser	Ser	Trp	Ser	Asn	Lys	595	600	605	
Ser	Tyr	Asn	Asp	Ile	Trp	Asp	Asn	Met	Thr	Trp	Leu	Gln	Trp	Asp	Lys	610	615	620	
Glu	Ile	Asn	Asn	Tyr	Thr	Gln	Ile	Ile	Tyr	Glu	Leu	Leu	Glu	Glu	Ser	625	630	635	640
Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu	Gln	Asp	Leu	Leu	Ala	Leu	Asp	Lys	645	650	655	
Trp	Ala	Asn	Leu	Trp	Asn	Trp	Phe	Asn	Ile	Ser	Asn	Trp	Leu	Trp	Tyr	660	665	670	

Ile Lys Ile Phe Ile Met Ile Val Gly Gly Leu Ile Gly Leu Arg Ile
 675 680 685
 Ile Phe Ala Val Leu Ser Ile Val Asn Arg Val Arg Gln Gly Tyr Ser
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 Pro Leu Ser Leu Gln Thr Leu Ile Pro Thr Thr Gln Arg Gly Pro Asp
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 Arg Pro Glu Gly Thr Glu Glu Glu Gly Gly Glu Gln Asp Arg Ser Arg
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 Ser Ile Arg Leu Val Asn Gly Phe Leu Pro Leu Ile Trp Asp Asp Leu
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 Ile Val Ala Arg Thr Val Glu Leu Leu Gly Ile Arg Gly Trp Glu Ala
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 Leu Lys Tyr Leu Trp Asn Leu Leu Leu Tyr Trp Gly Gln Glu Leu Arg
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 Asn Ser Ala Ile Asn Leu Leu Asp Thr Thr Ala Ile Ala Val Ala Glu
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<210> 99

<211> 2523

<212> DNA

<213> Human immunodeficiency virus

<400> 99

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<210> 100

<211> 2547

<212> DNA

<213> Human immunodeficiency virus

<400> 100

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<210> 101

<211> 832

<212> PRT

<213> Human immunodeficiency virus

<400> 101

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      20             25             30

```

```

Met Trp Val Thr Val Tyr Tyr Gly Val Pro Ala Trp Glu Asp Ala Asp
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```

```

Thr Ile Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Ser Ala Glu Lys
      50             55             60

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```

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
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```

Gln Glu Ile Ala Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
      85             90             95

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Asn His Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
     100             105             110

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```

Glu Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
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Asn Cys Thr Asn Val Thr Lys Asn Asn Asn Thr Lys Ile Met Gly Arg
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Glu	Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Val	Thr	Thr	Glu	Ile	Arg	Asp	145	150	155	160
Lys	Lys	Lys	Lys	Glu	Tyr	Ala	Leu	Phe	Tyr	Arg	Leu	Asp	Val	Val	Pro	165	170	175	
Ile	Asp	Asp	Asn	Asn	Asn	Ser	Tyr	Arg	Leu	Ile	Asn	Cys	Asn	Ala	Ser	180	185	190	
Thr	Ile	Lys	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Glu	Pro	Ile	Pro	Ile	195	200	205	
His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Arg	Asp	Lys	210	215	220	
Asn	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val	Gln	Cys	225	230	235	240
Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	245	250	255	
Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile	Lys	Ser	Glu	Asn	Leu	Thr	Asp	260	265	270	
Asn	Thr	Lys	Thr	Ile	Ile	Val	Gln	Leu	Asn	Lys	Ser	Val	Glu	Ile	Arg	275	280	285	
Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Ser	Phe	Gly	Pro	290	295	300	
Gly	Gln	Ala	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln	305	310	315	320
Ala	His	Cys	Asn	Val	Ser	Arg	Thr	Asp	Trp	Asn	Asn	Met	Leu	Gln	Asn	325	330	335	
Val	Thr	Ala	Lys	Leu	Lys	Glu	Leu	Phe	Asn	Lys	Asn	Ile	Thr	Phe	Asn	340	345	350	
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Ile	Val	Arg	Met	Trp	Gln	Arg	Val	Gly	Gln	Ala	Met	Tyr	Ala	Pro	Pro	405	410	415	
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Thr	Arg	Asp	Gly	Asn	Asn	Asn	Asp	Ser	Glu	Thr	Phe	Arg	Pro	Gly	Gly	435	440	445	

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Val	Val	Gly	Arg	Glu	Lys	Arg	Ala	Val	Gly	Leu	Gly	Ala	Val	Phe	Leu
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Gly	Phe	Leu	Gly	Thr	Ala	Gly	Ser	Thr	Met	Gly	Ala	Ala	Ser	Ile	Thr
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Leu	Thr	Val	Gln	Val	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln
		515					520					525			
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Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly
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Lys	Leu	Ile	Cys	Pro	Thr	Asn	Val	Pro	Trp	Asn	Ala	Ser	Trp	Ser	Asn
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Lys	Thr	Tyr	Asn	Glu	Ile	Trp	Asp	Asn	Met	Thr	Trp	Ile	Glu	Trp	Asp
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	610						615				620				
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625					630					635					640
Lys	Trp	Ala	Ser	Leu	Trp	Ser	Trp	Phe	Asp	Ile	Ser	Asn	Trp	Leu	Trp
				645					650					655	
Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	Val	Gly	Gly	Leu	Ile	Gly	Leu	Arg
			660					665					670		
Ile	Val	Phe	Ala	Val	Leu	Ser	Ile	Val	Asn	Arg	Val	Arg	Gln	Gly	Tyr
		675					680					685			
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705					710					715					720
Ser	Ile	Arg	Leu	Val	Asn	Gly	Phe	Leu	Ala	Leu	Ala	Trp	Asp	Asp	Leu
				725					730				735		
Arg	Ser	Leu	Cys	Leu	Phe	Ser	Tyr	His	Arg	Leu	Arg	Asp	Phe	Val	Leu
			740					745					750		

Leu	Asp	Ile	Val	Pro	Leu	Asn	Asp	Glu	Asn	Ser	Gly	Lys	Asn	Ser	Ser		
			180					185					190				
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		195					200					205					
Cys	Pro	Lys	Val	Thr	Phe	Asp	Pro	Ile	Pro	Ile	His	Tyr	Cys	Thr	Pro		
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225					230					235					240		
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Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Arg		
			260					265						270			
Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Leu	Thr	Asn	Asn	Val	Lys	Thr	Ile		
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Val	Arg	Asp	Gly	Gly	Arg	Thr	Glu	Ser	Asn	Asn	Thr	Glu	Ile	Phe	Arg		
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Pro	Gly	Gly	Gly	Asp	Met	Arg	Asn	Asn	Trp	Arg	Asn	Glu	Leu	Tyr	Lys		
465					470					475					480		

Tyr	Lys	Val	Val	Glu	Ile	Lys	Pro	Leu	Gly	Val	Ala	Pro	Thr	Ala	Ala	
				485					490					495		
Lys	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val	Gly	Leu	Gly	Ala	
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Ala	Ile	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	
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Trp	Ser	Asn	Lys	Ser	Gln	Gln	Glu	Ile	Trp	Asp	Asn	Met	Thr	Trp	Met	
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Gln	Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Ile	Leu	Thr	Pro	Asn	Pro	Gly	
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Gly	Pro	Gly	Arg	Leu	Gly	Arg	Ile	Glu	Glu	Glu	Gly	Gly	Glu	Gln	Asp	
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Lys	Thr	Arg	Ser	Ile	Arg	Leu	Val	Asn	Gly	Phe	Leu	Ala	Leu	Ala	Trp	
			740					745					750			
Asp	Asp	Leu	Arg	Asn	Leu	Cys	Leu	Phe	Ser	Tyr	His	Arg	Leu	Arg	Asp	
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Phe	Ile	Leu	Leu	Thr	Ala	Arg	Gly	Val	Glu	Leu	Leu	Gly	Arg	Asn	Ser	
	770					775					780					

Leu Arg Gly Leu Gln Arg Gly Trp Glu Ala Leu Lys Tyr Leu Gly Ser
785 790 795 800

Leu Val Gln Tyr Trp Gly Leu Glu Leu Lys Lys Ser Thr Ile Ser Leu
805 810 815

Val Asp Thr Ile Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Ile Ile
820 825 830

Asn Ile Val Gln Gly Ile Cys Arg Ala Ile His Asn Ile Pro Arg Arg
835 840 845

Ile Arg Gln Gly Phe Glu Ala Ala Leu Gln
850 855

<210> 103

<211> 2499

<212> DNA

<213> Human immunodeficiency virus

<400> 103

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<210> 104

<211> 2577

<212> DNA

<213> Human immunodeficiency virus

<400> 104

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gccatcgccg tggccgaggg caccgaccgc atcatcaaca tcgtgcaggg catctgccgc 2520
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<210> 105
 <211> 837
 <212> PRT
 <213> Human immunodeficiency virus

<400> 105
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 Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Thr Thr
 35 40 45
 Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Lys Ala Glu Ala
 50 55 60
 His Asn Ile Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
 65 70 75 80
 Gln Glu Ile Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
 85 90 95
 Asn Gly Met Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
 100 105 110
 Gln Gly Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
 115 120 125
 Asn Cys Ser Asp Val Asn Ala Thr Asn Ser Ala Thr Asn Thr Val Val
 130 135 140
 Ala Gly Met Lys Asn Cys Ser Phe Asn Ile Thr Thr Glu Ile Arg Asp
 145 150 155 160
 Lys Lys Lys Gln Glu Tyr Ala Leu Phe Tyr Lys Leu Asp Val Val Gln
 165 170 175
 Ile Asp Gly Ser Asn Thr Ser Tyr Arg Leu Ile Asn Cys Asn Thr Ser
 180 185 190
 Ala Ile Thr Gln Ala Cys Pro Lys Val Thr Phe Glu Pro Ile Pro Ile
 195 200 205
 His Tyr Cys Ala Pro Ala Gly Phe Ala Ile Leu Lys Cys Asn Asp Lys
 210 215 220
 Lys Phe Asn Gly Thr Gly Pro Cys Lys Asn Val Ser Thr Val Gln Cys
 225 230 235 240
 Thr His Gly Ile Lys Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly
 245 250 255

Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	Glu	Asn	Leu	Thr	Asp	260	265	270
Asn	Ala	Lys	Thr	Ile	Ile	Val	Gln	Leu	Asn	Glu	Ser	Val	Thr	Ile	Asn	275	280	285
Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	Gly	Pro	290	295	300
Gly	Gln	Thr	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asn	Ile	Arg	Gln	305	310	315
Ala	Tyr	Cys	Asn	Ile	Ser	Gly	Thr	Glu	Trp	Asn	Lys	Thr	Leu	Gln	Gln	325	330	335
Val	Ala	Lys	Lys	Leu	Gly	Asp	Leu	Leu	Asn	Lys	Thr	Thr	Ile	Ile	Phe	340	345	350
Lys	Pro	Ser	Ser	Gly	Gly	Asp	Pro	Glu	Ile	Thr	Thr	His	Thr	Phe	Asn	355	360	365
Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Lys	Leu	Phe	Asn	Ser	370	375	380
Ser	Trp	Thr	Ser	Asn	Asn	Thr	Gly	Asn	Thr	Ser	Thr	Ile	Thr	Leu	Pro	385	390	395
Cys	Arg	Ile	Lys	Gln	Ile	Ile	Asn	Met	Trp	Gln	Gly	Val	Gly	Lys	Ala	405	410	415
Ile	Tyr	Ala	Pro	Pro	Ile	Ala	Gly	Leu	Ile	Asn	Cys	Ser	Ser	Asn	Ile	420	425	430
Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Ala	Asn	Asn	Ser	Glu	Thr	435	440	445
Phe	Arg	Pro	Gly	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser	Glu	Leu	450	455	460
Tyr	Lys	Tyr	Lys	Val	Val	Lys	Ile	Glu	Pro	Leu	Gly	Leu	Ala	Pro	Thr	465	470	475
Lys	Ala	Lys	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Ile	Gly	Leu	485	490	495
Gly	Ala	Val	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	Gly	500	505	510
Ala	Ala	Ser	Leu	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	515	520	525
Ile	Val	Gln	Gln	Gln	Asn	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	530	535	540
His	Leu	Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	545	550	555

<211> 839
<212> PRT
<213> Human immunodeficiency virus

<400> 106

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			20					25					30		
Leu	Trp	Val	Thr	Val	Tyr	Tyr	Gly	Val	Pro	Val	Trp	Lys	Asp	Ala	Asp
		35					40					45			
Thr	Thr	Leu	Phe	Cys	Ala	Ser	Asp	Ala	Lys	Ala	Tyr	Ser	Thr	Glu	Lys
	50					55					60				
His	Asn	Val	Trp	Ala	Thr	His	Ala	Cys	Val	Pro	Thr	Asp	Pro	Asn	Pro
65					70					75					80
Gln	Glu	Ile	Pro	Leu	Glu	Asn	Val	Thr	Glu	Asn	Phe	Asn	Met	Trp	Lys
				85					90					95	
Asn	Asn	Met	Val	Glu	Gln	Met	His	Glu	Asp	Ile	Ile	Ser	Leu	Trp	Asp
			100					105					110		
Glu	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu
		115					120					125			
Asn	Cys	Thr	Asp	Val	Lys	Asn	Ala	Thr	Asn	Thr	Thr	Val	Glu	Ala	Ala
	130					135					140				
Glu	Ile	Lys	Asn	Cys	Ser	Phe	Asn	Ile	Thr	Thr	Glu	Ile	Lys	Asp	Lys
145					150				155						160
Lys	Lys	Lys	Glu	Tyr	Ala	Leu	Phe	Tyr	Lys	Leu	Asp	Val	Val	Pro	Ile
			165						170					175	
Asn	Asp	Asn	Asn	Asn	Ser	Ile	Tyr	Arg	Leu	Ile	Asn	Cys	Asn	Val	Ser
			180					185					190		
Thr	Val	Lys	Gln	Ala	Cys	Pro	Lys	Val	Thr	Phe	Glu	Pro	Ile	Pro	Ile
		195					200					205			
His	Tyr	Cys	Ala	Pro	Ala	Gly	Phe	Ala	Ile	Leu	Lys	Cys	Asn	Asp	Lys
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Lys	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	Ser	Thr	Val	Gln	Cys
225					230					235					240
Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	Leu	Leu	Leu	Asn	Gly
			245						250					255	
Ser	Leu	Ala	Glu	Gly	Glu	Val	Arg	Ile	Arg	Ser	Glu	Asn	Phe	Thr	Asn
			260					265					270		
Asn	Ala	Lys	Thr	Ile	Ile	Val	Gln	Leu	Asn	Ser	Ser	Val	Arg	Ile	Asn

275					280					285					
Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	His	Ile	Gly	Pro
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Gly	Gln	Ala	Phe	Tyr	Ala	Thr	Gly	Asp	Ile	Ile	Gly	Asp	Ile	Arg	Gln
305					310					315					320
Ala	His	Cys	Asn	Ile	Ser	Arg	Ala	Glu	Trp	Asn	Asn	Thr	Leu	Gln	Gln
			325						330					335	
Val	Ala	Lys	Gln	Leu	Arg	Glu	Asn	Phe	Asn	Lys	Thr	Ile	Ile	Phe	Asn
			340					345					350		
Asn	Pro	Ser	Gly	Gly	Asp	Leu	Glu	Ile	Thr	Thr	His	Ser	Phe	Asn	Cys
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Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Arg	Leu	Phe	Asn	Ser	Thr
	370					375					380				
Trp	Asn	Asn	Asp	Thr	Arg	Asn	Asp	Thr	Lys	Gln	Met	His	Ile	Thr	Leu
385					390					395					400
Pro	Cys	Arg	Ile	Lys	Gln	Ile	Val	Asn	Met	Trp	Gln	Arg	Val	Gly	Gln
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Ala	Met	Tyr	Ala	Pro	Pro	Ile	Gln	Gly	Lys	Ile	Arg	Cys	Asn	Ser	Asn
			420					425					430		
Ile	Thr	Gly	Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	Asn	Asn	Asn	Thr	Asn
	435						440				445				
Glu	Thr	Phe	Arg	Pro	Thr	Gly	Gly	Asp	Met	Arg	Asp	Asn	Trp	Arg	Ser
	450					455					460				
Glu	Leu	Tyr	Lys	Tyr	Lys	Val	Val	Glu	Ile	Lys	Pro	Leu	Gly	Val	Ala
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Pro	Thr	Arg	Ala	Lys	Arg	Arg	Val	Val	Glu	Arg	Glu	Lys	Arg	Ala	Val
				485					490					495	
Gly	Ile	Gly	Ala	Val	Leu	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr
			500					505					510		
Met	Gly	Ala	Ala	Ser	Ile	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu
	515						520					525			
Ser	Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu	Leu	Lys	Ala	Ile	Glu	Ala
	530					535					540				
Gln	Gln	His	Leu	Leu	Lys	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln
545					550					555					560
Ala	Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu
				565					570					575	
Gly	Ile	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro

580					585					590					
Trp	Asn	Phe	Ser	Trp	Ser	Asn	Lys	Ser	Tyr	Asp	Glu	Ile	Trp	Asp	Asn
	595						600					605			
Met	Thr	Trp	Ile	Glu	Trp	Glu	Arg	Glu	Ile	Asn	Asn	Tyr	Thr	Gln	Thr
	610					615					620				
Ile	Tyr	Thr	Leu	Leu	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu
625						630					635				640
Gln	Asp	Leu	Leu	Ala	Leu	Asp	Lys	Trp	Ala	Ser	Leu	Trp	Asn	Trp	Phe
				645					650					655	
Asp	Ile	Ser	Asn	Trp	Leu	Trp	Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	Val
			660					665					670		
Gly	Gly	Leu	Ile	Gly	Leu	Arg	Ile	Ile	Phe	Ala	Val	Leu	Ser	Ile	Val
		675					680					685			
Asn	Arg	Cys	Arg	Gln	Gly	Tyr	Ser	Pro	Leu	Ser	Phe	Gln	Thr	Leu	Thr
	690					695					700				
Pro	Asn	His	Lys	Glu	Ala	Asp	Arg	Pro	Gly	Gly	Ile	Glu	Glu	Gly	Gly
705						710					715				720
Gly	Glu	Gln	Asp	Arg	Thr	Arg	Ser	Ile	Arg	Leu	Val	Ser	Gly	Phe	Leu
				725					730					735	
Ala	Leu	Ala	Trp	Asp	Asp	Leu	Arg	Asn	Leu	Cys	Leu	Phe	Ser	Tyr	His
			740					745					750		
Arg	Leu	Arg	Asp	Phe	Ile	Leu	Ile	Ala	Ala	Arg	Ile	Val	Glu	Thr	Leu
		755					760					765			
Gly	Arg	Arg	Gly	Trp	Glu	Ile	Leu	Lys	Tyr	Leu	Gly	Asn	Leu	Ala	Gln
	770					775					780				
Tyr	Trp	Gly	Gln	Glu	Leu	Lys	Asn	Ser	Ala	Ile	Ser	Leu	Leu	Asn	Ala
785						790					795				800
Thr	Ala	Ile	Ala	Val	Ala	Glu	Gly	Thr	Asp	Arg	Ile	Ile	Glu	Val	Val
				805					810					815	
His	Arg	Val	Leu	Arg	Ala	Ile	Leu	His	Ile	Pro	Arg	Arg	Ile	Arg	Gln
			820					825					830		
Gly	Phe	Glu	Arg	Ala	Leu	Leu									
		835													

<210> 107

<211> 2514

<212> DNA

<213> Human immunodeficiency virus

<400> 107

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gtgcccgtgt	ggaaggagac	caccaccacc	ctgttctgcg	cctccgacgc	caaggcctac	180
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caggagatcg	tgctggagaa	cgtgaccgag	aacttcaaca	tgtggaagaa	cggcatggtg	300
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<210> 108

<211> 2520

<212> DNA

<213> Human immunodeficiency virus

<400> 108

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gagcagatgc	acgaggacat	catctccctg	tgggacgagt	ccctgaagcc	ctgctgaag	360
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<210> 109

<211> 838

<212> PRT

<213> Human immunodeficiency virus

<400> 109

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  20              25              30

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Thr
  35              40              45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ser Tyr Glu Arg Glu Val
  50              55              60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
  65              70              75             80

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Gln	Glu	Val	Asp	Leu	Glu	Asn	Val	Thr	Glu	Asn	Phe	Asp	Met	Trp	Lys	85	90	95
Asn	Asn	Met	Val	Glu	Gln	Met	His	Thr	Asp	Ile	Ile	Ser	Leu	Trp	Asp	100	105	110
Gln	Ser	Leu	Lys	Pro	Cys	Val	Lys	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu	115	120	125
Asn	Cys	Thr	Asp	Ala	Asn	Ala	Thr	Ala	Asn	Ala	Thr	Lys	Glu	His	Pro	130	135	140
Glu	Gly	Arg	Ala	Gly	Ala	Ile	Gln	Asn	Cys	Ser	Phe	Asn	Met	Thr	Thr	145	150	155
Glu	Val	Arg	Asp	Lys	Gln	Met	Lys	Val	Gln	Ala	Leu	Phe	Tyr	Arg	Leu	165	170	175
Asp	Ile	Val	Pro	Ile	Ser	Asp	Asn	Asn	Ser	Asn	Glu	Tyr	Arg	Leu	Ile	180	185	190
Asn	Cys	Asn	Thr	Ser	Thr	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Trp	195	200	205
Asp	Pro	Ile	Pro	Ile	His	Tyr	Cys	Ala	Pro	Ala	Gly	Tyr	Ala	Ile	Leu	210	215	220
Lys	Cys	Asn	Asp	Lys	Lys	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Lys	Asn	Val	225	230	235
Ser	Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Lys	Pro	Val	Val	Ser	Thr	Gln	245	250	255
Leu	Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	Ile	Ile	Arg	Ser	260	265	270
Gln	Asn	Ile	Ser	Asp	Asn	Ala	Lys	Thr	Ile	Ile	Val	His	Leu	Asn	Glu	275	280	285
Ser	Val	Gln	Ile	Asn	Cys	Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	290	295	300
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Gly	Asp	Ile	Arg	Lys	Ala	His	Cys	Asn	Val	Ser	Gly	Thr	Gln	Trp	Asn	325	330	335
Lys	Thr	Leu	Glu	Gln	Val	Lys	Lys	Lys	Leu	Arg	Ser	Tyr	Phe	Asn	Thr	340	345	350
Thr	Ile	Lys	Phe	Asn	Ser	Ser	Ser	Gly	Gly	Asp	Pro	Glu	Ile	Thr	Met	355	360	365
His	Ser	Phe	Asn	Cys	Arg	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Ser	Lys	370	375	380

Leu	Phe	Asn	Asp	Thr	Val	Ser	Asn	Asp	Thr	Ile	Ile	Leu	Pro	Cys	Arg	385	390	395	400
Ile	Lys	Gln	Ile	Val	Asn	Met	Trp	Gln	Glu	Val	Gly	Arg	Ala	Met	Tyr	405	410	415	
Ala	Ala	Pro	Ile	Ala	Gly	Asn	Ile	Thr	Cys	Thr	Ser	Asn	Ile	Thr	Gly	420	425	430	
Leu	Leu	Leu	Thr	Arg	Asp	Gly	Gly	His	Asn	Glu	Thr	Asn	Lys	Thr	Glu	435	440	445	
Thr	Phe	Arg	Pro	Gly	Gly	Gly	Asn	Met	Lys	Asp	Asn	Trp	Arg	Ser	Glu	450	455	460	
Leu	Tyr	Lys	Tyr	Lys	Val	Val	Glu	Ile	Glu	Pro	Leu	Gly	Val	Ala	Pro	465	470	475	480
Thr	Arg	Ala	Lys	Arg	Gln	Val	Val	Lys	Arg	Glu	Lys	Arg	Ala	Val	Gly	485	490	495	
Ile	Gly	Ala	Leu	Phe	Leu	Gly	Phe	Leu	Gly	Ala	Ala	Gly	Ser	Thr	Met	500	505	510	
Gly	Ala	Ala	Ser	Ile	Thr	Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	515	520	525	
Gly	Ile	Val	Gln	Gln	Gln	Ser	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	530	535	540	
Gln	His	Leu	Leu	Gln	Leu	Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	545	550	555	560
Arg	Val	Leu	Ala	Val	Glu	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	565	570	575	
Leu	Trp	Gly	Cys	Ser	Gly	Lys	Leu	Ile	Cys	Thr	Thr	Asn	Val	Pro	Trp	580	585	590	
Asn	Ser	Ser	Trp	Ser	Asn	Lys	Ser	Gln	Glu	Glu	Ile	Trp	Glu	Asn	Met	595	600	605	
Thr	Trp	Met	Glu	Trp	Glu	Lys	Glu	Ile	Asn	Asn	Tyr	Ser	Asn	Glu	Ile	610	615	620	
Tyr	Arg	Leu	Ile	Glu	Glu	Ser	Gln	Asn	Gln	Gln	Glu	Lys	Asn	Glu	Gln	625	630	635	640
Glu	Leu	Leu	Ala	Leu	Asp	Lys	Trp	Ala	Ser	Leu	Trp	Asn	Trp	Phe	Asp	645	650	655	
Ile	Ser	Asn	Trp	Leu	Trp	Tyr	Ile	Arg	Ile	Phe	Ile	Met	Ile	Val	Gly	660	665	670	
Gly	Leu	Ile	Gly	Leu	Arg	Ile	Val	Phe	Ala	Val	Leu	Ser	Ile	Val	Asn	675	680	685	

Arg Val Arg Lys Gly Tyr Ser Pro Leu Ser Leu Gln Thr His Ile Pro
 690 695 700
 Ser Pro Arg Glu Pro Asp Arg Pro Glu Gly Ile Glu Glu Gly Gly Gly
 705 710 715 720
 Glu Gln Gly Lys Asp Arg Ser Val Arg Leu Val Asn Gly Phe Leu Ala
 725 730 735
 Leu Ile Trp Asp Asp Leu Arg Ser Leu Cys Leu Phe Ser Tyr His Arg
 740 745 750
 Leu Arg Asp Leu Leu Leu Ile Val Thr Arg Ile Val Glu Leu Leu Gly
 755 760 765
 Arg Arg Gly Trp Glu Val Leu Lys Tyr Trp Trp Asn Leu Leu Gln Tyr
 770 775 780
 Trp Ser Gln Glu Leu Lys Asn Ser Ala Ile Ser Leu Leu Asn Thr Thr
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 Ala Ile Val Val Ala Glu Gly Thr Asp Arg Val Ile Glu Ala Leu Gln
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 Leu Glu Arg Ala Leu Leu
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<210> 110
 <211> 855
 <212> PRT
 <213> Human immunodeficiency virus

<400> 110

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 Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Thr
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 Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Ala Glu Val
 50 55 60
 His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
 65 70 75 80
 Gln Glu Val Ala Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Glu
 85 90 95
 Asn Asn Met Val Asp Gln Met Gln Glu Asp Ile Ile Ser Leu Trp Asp

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Gln	Ser	Leu	Lys	Pro	Cys	Val	Glu	Leu	Thr	Pro	Leu	Cys	Val	Thr	Leu	
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Asn	Cys	Thr	Asp	Phe	Asn	Asn	Thr	Thr	Asn	Asn	Thr	Thr	Asn	Thr	Arg	
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Asp	Val	Val	Gln	Met	Asp	Asn	Asp	Asn	Ser	Ser	Tyr	Arg	Leu	Thr	Ser	
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Cys	Asn	Thr	Ser	Ile	Ile	Thr	Gln	Ala	Cys	Pro	Lys	Val	Ser	Phe	Thr	
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Cys	Asn	Asn	Lys	Thr	Phe	Asn	Gly	Thr	Gly	Pro	Cys	Thr	Asn	Val	Ser	
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Thr	Val	Gln	Cys	Thr	His	Gly	Ile	Arg	Pro	Val	Val	Ser	Thr	Gln	Leu	
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Leu	Leu	Asn	Gly	Ser	Leu	Ala	Glu	Glu	Glu	Ile	Val	Ile	Arg	Ser	Lys	
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Asn	Phe	Thr	Asp	Asn	Ala	Lys	Thr	Ile	Ile	Val	Gln	Leu	Lys	Asp	Pro	
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Asp	Ile	Arg	Lys	Ala	His	Cys	Asn	Ile	Ser	Lys	Thr	Lys	Trp	Asn	Asn	
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Thr	Ile	Val	Phe	Gln	Arg	Ser	Ser	Gly	Gly	Asp	Pro	Glu	Ile	Val	Met	
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His	Ser	Phe	Asn	Cys	Gly	Gly	Glu	Phe	Phe	Tyr	Cys	Asn	Thr	Thr	Gln	
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Leu	Phe	Asn	Ser	Thr	Trp	Arg	Ser	Asn	Ser	Thr	Trp	Asn	Asp	Thr	Thr	
385					390					395				400		
Glu	Thr	Asn	Asn	Thr	Asp	Leu	Ile	Thr	Leu	Pro	Cys	Arg	Ile	Lys	Gln	

405						410						415					
Ile	Val	Asn	Met	Trp	Gln	Lys	Val	Gly	Lys	Ala	Met	Tyr	Ala	Pro	Pro		
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Leu	Thr	Val	Gln	Ala	Arg	Gln	Leu	Leu	Ser	Gly	Ile	Val	Gln	Gln	Gln		
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Asn	Asn	Leu	Leu	Arg	Ala	Ile	Glu	Ala	Gln	Gln	His	Met	Leu	Gln	Leu		
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Thr	Val	Trp	Gly	Ile	Lys	Gln	Leu	Gln	Ala	Arg	Val	Leu	Ala	Val	Glu		
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Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Gly	Ile	Trp	Gly	Cys	Ser	Gly		
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Lys	Leu	Ile	Cys	Thr	Thr	Thr	Val	Pro	Trp	Asn	Ala	Ser	Trp	Ser	Asn		
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Lys	Ser	Leu	Asp	Asp	Ile	Trp	Asn	Asn	Met	Thr	Trp	Met	Glu	Trp	Glu		
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Lys	Trp	Ala	Ser	Leu	Trp	Asn	Trp	Phe	Asn	Ile	Thr	Asn	Trp	Leu	Trp		
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Tyr	Ile	Lys	Ile	Phe	Ile	Met	Ile	Ile	Gly	Gly	Leu	Ile	Gly	Leu	Arg		
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Ile	Val	Phe	Ala	Val	Leu	Ser	Ile	Ile	Asn	Arg	Val	Arg	Lys	Gly	Tyr		
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Arg Pro Gly Arg	Ile Glu Glu Glu Gly Gly Glu Gln Asp Lys Asp Arg					
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Ser Ile Arg Leu Val Ser Gly Phe Leu Ala Leu Ala Trp Asp Asp Leu						
	740		745		750	
Arg Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp Phe Ile Leu						
	755		760		765	
Ile Ala Ala Arg Thr Val Glu Leu Leu Gly Arg Ser Ser Leu Lys Gly						
	770		775		780	
Leu Arg Leu Gly Trp Glu Gly Leu Lys Tyr Leu Trp Asn Leu Leu Leu						
	785		790		795	800
Tyr Trp Gly Arg Glu Leu Lys Asn Ser Ala Ile Asn Leu Leu Asp Thr						
	805		810		815	
Val Ala Ile Ala Val Ala Asn Trp Thr Asp Arg Ala Ile Glu Val Val						
	820		825		830	
Gln Arg Val Gly Arg Ala Val Leu Asn Ile Pro Val Arg Ile Arg Gln						
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<210> 111
 <211> 2517
 <212> DNA
 <213> Human immunodeficiency virus

<400> 111
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<210> 112

<211> 2568

<212> DNA

<213> Human immunodeficiency virus

<400> 112

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```

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```

<210> 113

<211> 498

<212> PRT

<213> Human immunodeficiency virus

<400> 113

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Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
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```

```

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Leu Lys
      20             25             30

```

```

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
    35             40             45

```

```

Gly Leu Leu Glu Thr Ser Glu Gly Cys Gln Gln Ile Ile Glu Gln Leu
    50             55             60

```

```

Gln Pro Ala Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
    65             70             75            80

```

```

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Val Lys Asp
      85             90            95

```

```

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys
    100            105            110

```

```

Gln Lys Thr Gln Gln Ala Ala Ala Asp Thr Gly Asn Ser Ser Lys Val
    115            120            125

```

```

Ser Gln Asn Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His
    130            135            140

```

```

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
    145            150            155            160

```

```

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
      165            170            175

```

```

Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly

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180						185						190					
Gly	His	Gln	Ala	Ala	Met	Gln	Met	Leu	Lys	Asp	Thr	Ile	Asn	Glu	Glu		
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	210						215				220						
Pro	Gly	Gln	Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr		
225					230					235					240		
Ser	Thr	Leu	Gln	Glu	Gln	Ile	Gly	Trp	Met	Thr	Ser	Asn	Pro	Pro	Ile		
			245						250					255			
Pro	Val	Gly	Glu	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys		
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Ile	Val	Arg	Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly		
		275						280					285				
Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Thr	Leu		
	290						295				300						
Arg	Ala	Glu	Gln	Ala	Thr	Gln	Asp	Val	Lys	Asn	Trp	Met	Thr	Asp	Thr		
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Leu	Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Lys	Ala		
			325						330					335			
Leu	Gly	Pro	Gly	Ala	Thr	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly		
		340						345					350				
Val	Gly	Gly	Pro	Ser	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser		
		355					360						365				
Gln	Val	Thr	Asn	Thr	Thr	Ile	Met	Met	Gln	Arg	Gly	Asn	Phe	Lys	Gly		
	370						375				380						
Gln	Lys	Arg	Ile	Ile	Lys	Cys	Phe	Asn	Cys	Gly	Lys	Glu	Gly	His	Ile		
385					390					395					400		
Ala	Arg	Asn	Cys	Arg	Ala	Pro	Arg	Lys	Lys	Gly	Cys	Trp	Lys	Cys	Gly		
			405						410					415			
Lys	Glu	Gly	His	Gln	Met	Lys	Asp	Cys	Thr	Glu	Arg	Gln	Ala	Asn	Phe		
			420					425					430				
Leu	Gly	Lys	Ile	Trp	Pro	Ser	Asn	Lys	Gly	Arg	Pro	Gly	Asn	Phe	Leu		
		435						440					445				
Gln	Ser	Arg	Pro	Glu	Pro	Thr	Ala	Pro	Pro	Ala	Glu	Ser	Phe	Gly	Phe		
	450						455				460						
Gly	Glu	Glu	Ile	Thr	Pro	Ser	Pro	Lys	Gln	Glu	Pro	Lys	Asp	Lys	Glu		
465					470					475					480		
Leu	Tyr	Pro	Leu	Ala	Ser	Leu	Lys	Ser	Leu	Phe	Gly	Asn	Asp	Pro	Leu		

Ser Gln

<210> 114

<211> 1497

<212> DNA

<213> Human immunodeficiency virus

<400> 114

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<210> 115

<211> 498

<212> PRT

<213> Human immunodeficiency virus

<400> 115

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Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
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Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Leu Lys
      20             25            30

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
      35             40            45

Gly Leu Leu Glu Thr Ala Glu Gly Cys Gln Gln Ile Met Gly Gln Leu
      50             55            60

```

Gln	Pro	Ala	Leu	Gln	Thr	Gly	Thr	Glu	Glu	Leu	Arg	Ser	Leu	Tyr	Asn	
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Thr	Val	Ala	Thr	Leu	Tyr	Cys	Val	His	Gln	Arg	Ile	Glu	Val	Lys	Asp	
				85					90					95		
Thr	Lys	Glu	Ala	Leu	Asp	Lys	Ile	Glu	Glu	Glu	Gln	Asn	Lys	Ser	Gln	
			100					105					110			
Gln	Lys	Thr	Gln	Gln	Ala	Ala	Ala	Asp	Lys	Gly	Asp	Ser	Ser	Gln	Val	
		115					120					125				
Ser	Gln	Asn	Tyr	Pro	Ile	Val	Gln	Asn	Leu	Gln	Gly	Gln	Met	Val	His	
	130					135					140					
Gln	Ala	Ile	Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys	Val	Val	Glu	
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	210						215				220					
Pro	Gly	Gln	Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr	
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Ile	Val	Arg	Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly	
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Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Thr	Leu	
	290					295					300					
Arg	Ala	Glu	Gln	Ala	Thr	Gln	Asp	Val	Lys	Asn	Trp	Met	Thr	Asp	Thr	
305					310					315					320	
Leu	Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Lys	Ala	
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		340						345					350			
Val	Gly	Gly	Pro	Gly	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser	
		355					360					365				

Gln Val Thr Asn Ala Asn Ile Met Met Gln Arg Gly Asn Phe Lys Gly
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Pro Arg Arg Ile Val Lys Cys Phe Asn Cys Gly Lys Glu Gly His Ile
 385 390 395 400

Ala Arg Asn Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly
 405 410 415

Lys Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe
 420 425 430

Leu Gly Lys Ile Trp Pro Ser Asn Lys Gly Arg Pro Gly Asn Phe Leu
 435 440 445

Gln Ser Arg Pro Glu Pro Thr Ala Pro Pro Ala Glu Ser Phe Gly Phe
 450 455 460

Gly Glu Glu Ile Thr Pro Ser Pro Lys Gln Glu Pro Lys Asp Lys Glu
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Leu Tyr Pro Leu Ala Ser Leu Lys Ser Leu Phe Gly Ser Asp Pro Leu
 485 490 495

Ser Gln

<210> 116

<211> 1497

<212> DNA

<213> Human immunodeficiency virus

<400> 116

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<210> 117

<211> 498

<212> PRT

<213> Human immunodeficiency virus

<400> 117

Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
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Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Leu Lys
 20 25 30

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
 35 40 45

Ser Leu Leu Glu Thr Thr Glu Gly Cys Gln Gln Ile Met Glu Gln Leu
 50 55 60

Gln Pro Ala Leu Lys Thr Gly Thr Glu Glu Leu Arg Ser Leu Tyr Asn
 65 70 75 80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Asp Val Lys Asp
 85 90 95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Ile Gln Asn Lys Ser Lys
 100 105 110

Gln Lys Thr Gln Gln Ala Ala Ala Asp Thr Gly Asn Ser Ser Lys Val
 115 120 125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ala Gln Gly Gln Met Val His
 130 135 140

Gln Ser Leu Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu
 145 150 155 160

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
 165 170 175

Glu Gly Ala Thr Pro Gln Asp Leu Asn Met Met Leu Asn Ile Val Gly
 180 185 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu
 195 200 205

Ala Ala Glu Trp Asp Arg Leu His Pro Val His Ala Gly Pro Ile Pro
 210 215 220

Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
 225 230 235 240

Ser Thr Pro Gln Glu Gln Ile Gly Trp Met Thr Gly Asn Pro Pro Ile
 245 250 255

Pro Val Gly Asp Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
 260 265 270
 Ile Val Arg Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Lys Gln Gly
 275 280 285
 Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu
 290 295 300
 Arg Ala Glu Gln Ala Thr Gln Glu Val Lys Asn Trp Met Thr Glu Thr
 305 310 315 320
 Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Ser Ile Leu Arg Ala
 325 330 335
 Leu Gly Pro Gly Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
 340 345 350
 Val Gly Gly Pro Gly His Lys Ala Arg Val Leu Ala Glu Ala Met Ser
 355 360 365
 Gln Val Gln His Thr Asn Ile Met Met Gln Arg Gly Asn Phe Arg Gly
 370 375 380
 Gln Lys Arg Ile Lys Cys Phe Asn Cys Gly Lys Glu Gly His Leu Ala
 385 390 395 400
 Arg Asn Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Lys
 405 410 415
 Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu
 420 425 430
 Gly Lys Ile Trp Pro Ser Ser Lys Gly Arg Pro Gly Asn Phe Pro Gln
 435 440 445
 Ser Arg Pro Glu Pro Thr Ala Pro Pro Ala Glu Ile Phe Gly Met Gly
 450 455 460
 Glu Glu Ile Thr Ser Pro Pro Lys Gln Glu Gln Lys Asp Arg Glu Gln
 465 470 475 480
 Asp Pro Pro Leu Val Ser Leu Lys Ser Leu Phe Gly Asn Asp Pro Leu
 485 490 495
 Ser Gln

<210> 118

<211> 1497

<212> DNA

<213> Human immunodeficiency virus

<400> 118

atgggcgccc gcgctccgt gctgtccggc ggcaagctgg acgctggga gaagatccgc 60

```

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ctggagcgct tcgccctgaa cccctccctg ctggagacca ccgagggctg ccagcagatc 180
atggagcagc tgcagcccgc cctgaagacc ggcaccgagg agctgcgctc cctgtacaac 240
accgtggcca ccctgtactg cgtgcaccag cgcacgcagc tgaaggacac caaggaggcc 300
ctggacaaga tcgaggagat ccagaacaag tccaagcaga agaccagca ggccgcgcgc 360
gacaccggca actcctccaa ggtgtcccag aactacccca tcgtgcagaa cgcccagggc 420
cagatggtgc accagtccct gtccccccgc accctgaacg cctgggtgaa ggtgatcgag 480
gagaaggcct tctccccga ggtgatcccc atgttctccg ccctgtccga gggcgccacc 540
ccccaggacc tgaacatgat gctgaacatc gtgggcggcc accaggccgc catgcagatg 600
ctgaaggaca ccatcaacga ggaggccgcc gagtgggacc gcctgcaccc cgtgcacgcc 660
ggccccatcc cccccggcca gatgcgcgag cccgcggct ccgacatcgc cggcaccacc 720
tccaccccc aggagcagat cggctggatg accggcaacc cccccatccc cgtgggcgac 780
atctacaagc gctggatcat cctgggcctg aacaagatcg tgcgcatgta ctccccctg 840
tccatcctgg acatcaagca gggccccaa gaggcccttc gcgactacgt ggaccgcttc 900
ttcaagaccc tgcgcgccga gcaggccacc caggaggtga agaactggat gaccgagacc 960
ctgctggtgc agaacgcaa ccccgactgc aagtccatcc tgcgcgccct gggccccggc 1020
gccaccctgg aggagatgat gaccgcctgc cagggcgctg gcggccccgg ccacaaggcc 1080
cgcgtgctgg ccgaggccat gtcccagggt cagcacacca acatcatgat gcagcgcggc 1140
aacttcgcg gccagaagcg catcaagtgc ttcaactgcg gcaaggaggg ccacctggcc 1200
cgcaactgcc gcgccccccg caagaagggc tgctggaagt gcggcaagga gggccaccag 1260
atgaaggact gcaccgagcg ccaggccaac ttcttgggca agatctggcc ctctccaag 1320
ggccgccccg gcaacttccc ccagtcccgc cccgagccca ccgccccccc cgccgagatc 1380
ttcggcatgg gcgaggagat cacctcccc cccaagcagg agcagaagga ccgcgagcag 1440
gacccccccc tgggtgtccct gaagtccctg ttcggcaacg accccctgtc ccagtaa 1497

```

<210> 119

<211> 498

<212> PRT

<213> Human immunodeficiency virus

<400> 119

```

Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
  1              5              10              15

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```

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Leu Lys
      20              25              30

```

```

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
      35              40              45

```

```

Gly Leu Leu Glu Thr Ala Glu Gly Cys Gln Gln Ile Met Gly Gln Leu
      50              55              60

```

```

Gln Pro Ala Leu Lys Thr Gly Thr Glu Glu Leu Arg Ser Leu Tyr Asn
      65              70              75              80

```

```

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Val Lys Asp
      85              90              95

```

```

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Ile Gln Asn Lys Ser Lys
      100             105             110

```

```

Gln Lys Thr Gln Gln Ala Ala Ala Asp Thr Gly Asn Ser Ser Lys Val
      115             120             125

```

```

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ala Gln Gly Gln Met Val His

```

130	135	140
Gln Ser Leu Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu 145 150 155 160		
Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser 165 170 175		
Glu Gly Ala Thr Pro Gln Asp Leu Asn Met Met Leu Asn Ile Val Gly 180 185 190		
Gly His Gln Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu 195 200 205		
Ala Ala Glu Trp Asp Arg Leu His Pro Val His Ala Gly Pro Ile Pro 210 215 220		
Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr 225 230 235 240		
Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Gly Asn Pro Pro Ile 245 250 255		
Pro Val Gly Asp Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys 260 265 270		
Ile Val Arg Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Arg Gln Gly 275 280 285		
Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu 290 295 300		
Arg Ala Glu Gln Ala Thr Gln Glu Val Lys Asn Trp Met Thr Glu Thr 305 310 315 320		
Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Ser Ile Leu Arg Ala 325 330 335		
Leu Gly Pro Gly Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly 340 345 350		
Val Gly Gly Pro Gly His Lys Ala Arg Val Leu Ala Glu Ala Met Ser 355 360 365		
Gln Val Gln Asn Thr Asp Ile Met Met Gln Arg Gly Asn Phe Arg Gly 370 375 380		
Pro Lys Arg Ile Lys Cys Phe Asn Cys Gly Lys Glu Gly His Leu Ala 385 390 395 400		
Arg Asn Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Lys 405 410 415		
Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu 420 425 430		
Gly Lys Ile Trp Pro Ser Ser Lys Gly Arg Pro Gly Asn Phe Pro Gln		

435 440 445
 Ser Arg Pro Glu Pro Thr Ala Pro Pro Ala Glu Asn Phe Gly Met Gly
 450 455 460
 Glu Glu Met Ile Ser Ser Pro Lys Gln Glu Gln Lys Asp Arg Glu Gln
 465 470 475 480
 Tyr Pro Pro Leu Val Ser Leu Lys Ser Leu Phe Gly Asn Asp Pro Leu
 485 490 495
 Ser Gln

<210> 120
 <211> 1497
 <212> DNA
 <213> Human immunodeficiency virus

<400> 120
 atgggcgccc gcgcctccgt gctgtccggc ggcaagctgg acgcctggga gaagatccgc 60
 ctgcgccccg gcggcaagaa gaagtaccgc ctgaagcacc tgggtgtgggc ctcccgcgag 120
 ctggagcgct tcgcccgtgaa ccccggcctg ctggagaccg ccgagggctg ccagcagatc 180
 atgggccagc tgcagcccgc cctgaagacc ggcaccgagg agctgcgctc cctgtacaac 240
 accgtggcca ccctgtactg cgtgcaccag cgcctcgagg tgaaggacac caaggaggcc 300
 ctggacaaga tcgaggagat ccagaacaag tccaagcaga agaccagca ggccgcccgc 360
 gacaccggca actcctccaa ggtgtcccag aactaccca tcgtgcagaa cgcccagggc 420
 cagatggtgc accagtccct gtccccccgc accctgaacg cctgggtgaa ggtgatcgag 480
 gagaaggcct tctccccga ggtgatcccc atgttctcgc cctgtccga gggcgccacc 540
 ccccaggacc tgaacatgat gctgaacatc gtgggcggcc accaggccgc catgcagatg 600
 ctgaaggaca ccatcaacga ggaggccgcc gagtgggacc gcctgcaccc cgtgcacgcc 660
 ggccccatcc cccccggcca gatgcgcgag ccccgcggtc ccgacatcgc cggcaccacc 720
 tccaccctgc aggagcagat cggctggatg accggcaacc cccccatccc cgtgggcgac 780
 atctacaagc gctggatcat cctgggcctg aacaagatcg tgcgcatgta ctccccctg 840
 tccatcctgg acatccgcca gggccccaag gagcccttc gcgactacgt ggaccgcttc 900
 ttcaagaccc tgcgcgccga gcaggccacc caggaggtga agaactggat gaccgagacc 960
 ctgctggtgc agaacgcaa ccccgactgc aagtccatcc tgcgcgccct gggccccggc 1020
 gccaccctgg aggagatgat gaccgcctgc cagggcgtgg gcggccccgg ccacaaggcc 1080
 cgcgtgctgg ccgaggccat gtcccagggtg cagaacaccg acatcatgat gcagcgcggc 1140
 aacttccgcg gcccgaagcg catcaagtgc ttcaactgcg gcaaggaggg ccacctggcc 1200
 cgcaactgcc gcgcccccg caagaagggc tgctggaagt gcggcaagga gggccaccag 1260
 atgaaggact gcaccgagcg ccaggccaac ttcttgggca agatctggcc ctctccaag 1320
 ggccgccccg gcaacttccc ccagtcccgc cccagccca ccgccccccc cgccgagaac 1380
 ttccggcatg gcgaggagat gatctcctcc cccaagcagg agcagaagga ccgcgagcag 1440
 tcccccccc tggtgtccct gaagtccctg ttcggcaacg acccctgtc ccagtaa 1497

<210> 121
 <211> 500
 <212> PRT
 <213> Human immunodeficiency virus

<400> 121
 Met Gly Ala Arg Ala Ser Ile Leu Ser Gly Gly Lys Leu Asp Ala Trp
 1 5 10 15

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Leu Lys
 20 25 30
 His Leu Val Trp Ala Ser Arg Glu Leu Glu Lys Phe Ser Ile Asn Pro
 35 40 45
 Ser Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Ile Arg Gln Leu
 50 55 60
 Gln Pro Ala Leu Gln Thr Gly Thr Glu Glu Leu Lys Ser Leu Tyr Asn
 65 70 75 80
 Thr Val Ala Val Leu Tyr Cys Val His Gln Arg Ile Asp Val Lys Asp
 85 90 95
 Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Cys Lys
 100 105 110
 Gln Lys Thr Gln His Ala Ala Ala Asp Thr Gly Asn Ser Ser Ser Ser
 115 120 125
 Ser Gln Asn Tyr Pro Ile Val Gln Asn Ala Gln Gly Gln Met Val His
 130 135 140
 Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
 145 150 155 160
 Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Thr Ala Leu Ser
 165 170 175
 Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
 180 185 190
 Gly His Gln Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu
 195 200 205
 Ala Ala Glu Trp Asp Arg Leu His Pro Val His Ala Gly Pro Ile Pro
 210 215 220
 Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
 225 230 235 240
 Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Ser Asn Pro Pro Ile
 245 250 255
 Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
 260 265 270
 Ile Val Arg Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Arg Gln Gly
 275 280 285
 Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu
 290 295 300
 Arg Ala Glu Gln Ala Thr Gln Glu Val Lys Asn Trp Met Thr Asp Thr
 305 310 315 320

Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Ser Ile Leu Arg Ala
 325 330 335
 Leu Gly Pro Gly Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
 340 345 350
 Val Gly Gly Pro Ser His Lys Ala Arg Val Leu Ala Glu Ala Met Ser
 355 360 365
 Gln Val Gln Asn Thr Asn Thr Asn Ile Met Met Gln Arg Gly Asn Phe
 370 375 380
 Arg Gly Gln Lys Arg Ile Lys Cys Phe Asn Cys Gly Lys Glu Gly His
 385 390 395 400
 Leu Ala Arg Asn Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys
 405 410 415
 Gly Lys Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn
 420 425 430
 Phe Leu Gly Lys Ile Trp Pro Ser Asn Lys Gly Arg Pro Gly Asn Phe
 435 440 445
 Pro Gln Ser Arg Thr Glu Pro Thr Ala Pro Pro Ala Glu Asn Leu Arg
 450 455 460
 Met Gly Glu Glu Ile Thr Ser Ser Leu Lys Gln Glu Leu Lys Thr Arg
 465 470 475 480
 Glu Pro Tyr Asn Pro Ala Ile Ser Leu Lys Ser Leu Phe Gly Asn Asp
 485 490 495
 Pro Leu Ser Gln
 500

<210> 122
 <211> 1503
 <212> DNA
 <213> Human immunodeficiency virus

<400> 122
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 ctgcgccccg gcggcaagaa gaagtaccgc ctgaagcacc tgggtgtggc ctcccgcgag 120
 ctggagaagt tctccatcaa cccctccctg ctggagacct ccgagggctg ccgccagatc 180
 atccgccagc tgcagcccgc cctgcagacc ggcaccgagg agctgaagtc cctgtacaac 240
 accgtggccg tgctgtactg cgtgcaccag cgcacgcagc tgaaggacac caaggaggcc 300
 ctggacaaga tcgaggagga gcagaacaag tgcaagcaga agaccagca cgccgccgcc 360
 gacaccggca actcctcctc ctctctccag aactacccca tcgtgcagaa cgcccagggc 420
 cagatgggtg accaggccat ctccccccgc accctgaacg cctgggtgaa ggtgggtggag 480
 gagaaggcct tctccccga ggtgatcccc atgttcaccg ccctgtccga gggcgccacc 540
 ccccaggacc tgaacacccat gctgaacacc gtgggcggcc accaggccgc catgcagatg 600
 ctgaaggaca ccatcaacga ggaggccgcc gagtgggacc gcctgcaccc cgtgcacgcc 660
 ggccccatcc cccccggcca gatgcgcgag ccccgcggtc ccgacatcgc cggcaccacc 720
 tccaccctgc aggagcagat cggctggatg acctccaacc cccccatccc cgtgggcgag 780
 atctacaagc gctggatcat cctgggcctg aacaagatcg tgcgcatgta ctccccctg 840

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tccatcctgg acatccgccg gggccccaag gagcccttcc gcgactacgt ggaccgcttc 900
ttcaagaccc tgcgcgccga gcaggccacc caggaggtga agaactggat gaccgacacc 960
ctgctggtgc agaacgccaa ccccgactgc aagtccatcc tgcgcgccct gggccccggc 1020
gccaccctgg aggagatgat gaccgcctgc cagggcgtgg gcggccccctc ccacaaggcc 1080
cgcgtgctgg ccgaggccat gtcccagggtg cagaacacca acaccaacat catgatgcag 1140
cgcggaact tccgcggcca gaagcgcac aagtgttca actgcggcaa ggagggccac 1200
ctggccccga actgccgcgc cccccgcaag aagggtgct ggaagtgcgg caaggagggc 1260
caccagatga aggactgcac cgagcgccag gccaaacttc tgggcaagat ctggccctcc 1320
aacaagggcc gccccggcaa cttccccag tcccgaccg agcccaccgc ccccccgcc 1380
gagaacctgc gcatgggcga ggagatcacc tcctccctga agcaggagct gaagaccgc 1440
gagccctaca accccgccat ctccctgaag tcctgttcg gcaacgaccc cctgtcccag 1500
taa 1503

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<210> 123

<211> 488

<212> PRT

<213> Human immunodeficiency virus

<400> 123

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Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Glu Leu Asp Arg Trp
 1             5             10             15

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys
      20             25             30

His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro
      35             40             45

Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu
      50             55             60

Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
      65             70             75             80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Val Lys Asp
      85             90             95

Thr Lys Glu Ala Leu Glu Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys
      100            105            110

Lys Lys Ala Gln Gln Ala Ala Ala Asp Thr Gly Asn Ser Ser Gln Val
      115            120            125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His
      130            135            140

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
      145            150            155            160

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
      165            170            175

Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
      180            185            190

Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu

```

195					200					205						
Ala	Ala	Glu	Trp	Asp	Arg	Leu	His	Pro	Val	His	Ala	Gly	Pro	Ile	Ala	
210					215					220						
Pro	Gly	Gln	Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr	
225					230					235					240	
Ser	Thr	Leu	Gln	Glu	Gln	Ile	Gly	Trp	Met	Thr	Asn	Asn	Pro	Pro	Ile	
245					250					255						
Pro	Val	Gly	Glu	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	
260					265					270						
Ile	Val	Arg	Met	Tyr	Ser	Pro	Thr	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly	
275					280					285						
Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Tyr	Lys	Thr	Leu	
290					295					300						
Arg	Ala	Glu	Gln	Ala	Ser	Gln	Glu	Val	Lys	Asn	Trp	Met	Thr	Glu	Thr	
305					310					315					320	
Leu	Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Lys	Ala	
325					330					335						
Leu	Gly	Pro	Ala	Ala	Thr	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly	
340					345					350						
Val	Gly	Gly	Pro	Gly	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser	
355					360					365						
Gln	Val	Thr	Asn	Ser	Ala	Thr	Ile	Met	Met	Gln	Arg	Gly	Asn	Phe	Arg	
370					375					380						
Asn	Gln	Arg	Lys	Thr	Val	Lys	Cys	Phe	Asn	Cys	Gly	Lys	Glu	Gly	His	
385					390					395					400	
Ile	Ala	Lys	Asn	Cys	Arg	Ala	Pro	Arg	Lys	Lys	Gly	Cys	Trp	Lys	Cys	
405					410					415						
Gly	Lys	Glu	Gly	His	Gln	Met	Lys	Asp	Cys	Thr	Glu	Arg	Gln	Ala	Asn	
420					425					430						
Phe	Leu	Gly	Lys	Ile	Trp	Pro	Ser	His	Lys	Gly	Arg	Pro	Gly	Asn	Phe	
435					440					445						
Leu	Gln	Ser	Arg	Pro	Glu	Pro	Thr	Ala	Pro	Pro	Glu	Glu	Ser	Phe	Arg	
450					455					460						
Phe	Gly	Glu	Glu	Thr	Thr	Thr	Pro	Ser	Gln	Lys	Gln	Glu	Pro	Ile	Asp	
465					470					475					480	
Lys	Glu	Leu	Tyr	Pro	Leu	Ala	Ser									
485																

<210> 124
 <211> 1467
 <212> DNA
 <213> Human immunodeficiency virus

<400> 124
 atgggcgccc gcgcctccgt gctgtccggc ggcgagctgg accgctggga gaagatccgc 60
 ctgcgccccg gcggcaagaa gaagtacaag ctgaagcaca tcgtgtgggc ctcccgcgag 120
 ctggagcgct tcgccgtgaa ccccgccctg ctggagacct ccgagggctg ccgccagatc 180
 ctggggccagc tgcagccctc cctgcagacc ggctccgagg agctgcgctc cctgtacaac 240
 accgtggcca ccctgtactg cgtgcaccag cgcacgagg tgaaggacac caaggaggcc 300
 ctggagaaga tcgaggagga gcagaacaag tccaagaaga aggcccagca ggccgcccgc 360
 gacaccggca actcctccca ggtgtcccag aactacccca tcgtgcagaa cctgcagggc 420
 cagatggtgc accaggccat ctccccccgc accctgaacg cctgggtgaa ggtggtggag 480
 gagaaggcct tctccccga ggtgatcccc atgttctccg ccctgtccga gggcgccacc 540
 ccccaggacc tgaacaccat gctgaacacc gtgggcggcc accaggccgc catgcagatg 600
 ctgaaggaga ccatcaacga ggaggccgcc gagtgggacc gcctgcaccc cgtgcacgcc 660
 ggccccatcg cccccggcca gatgcgcgag ccccgcggt cgcacatcgc cggcaccacc 720
 tccaccctgc aggagcagat cggctggatg accaacaacc ccccatccc cgtgggcgag 780
 atctacaagc gctggatcat cctgggcctg aacaagatcg tgcgcatgta ctccccacc 840
 tccatcctgg acatccgcca gggccccaag gagcccttc gcgactacgt ggaccgcttc 900
 tacaagacc tgcgcgccga gcaggcctcc caggaggtga agaactgat gaccgagacc 960
 ctgctggtgc agaacgcaa cccgactgc aagaccatcc tgaaggccct gggccccgcc 1020
 gccaccctgg aggagatgat gaccgcctgc cagggcgtgg gcggccccgg ccacaaggcc 1080
 cgcgctgctg ccgaggccat gtcccagggtg accaactccg ccaccatcat gatgcagcgc 1140
 ggcaacttcc gcaaccagcg caagaccgtg aagtgcctca actgcggcaa ggagggccac 1200
 atcgccaaga actgcgcgcg cccccgcaag aagggtgctt ggaagtgcgg caaggaggcc 1260
 caccagatga aggactgcac cgagcgccag gccaaacttc tgggcaagat ctggccctcc 1320
 cacaagggcc gccccggcaa cttcctgcag tcccgccccg agcccaccgc ccccccgag 1380
 gagtccttcc gcttcggcga ggagaccacc accccctccc agaagcagga gcccatcgac 1440
 aaggagctgt accccctggc ctctaa 1467

<210> 125
 <211> 500
 <212> PRT
 <213> Human immunodeficiency virus

<400> 125
 Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Lys Trp
 1 5 10 15
 Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys
 20 25 30
 His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro
 35 40 45
 Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu
 50 55 60
 Gln Pro Ala Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
 65 70 75 80
 Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Val Lys Asp
 85 90 95

Thr	Lys	Glu	Ala	Leu	Asp	Lys	Ile	Glu	Glu	Glu	Gln	Asn	Lys	Ser	Lys
			100					105					110		
Lys	Lys	Ala	Gln	Gln	Ala	Ala	Ala	Asp	Thr	Gly	Asn	Ser	Ser	Gln	Val
		115					120					125			
Ser	Gln	Asn	Tyr	Pro	Ile	Val	Gln	Asn	Leu	Gln	Gly	Gln	Met	Val	His
	130					135					140				
Gln	Ala	Ile	Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys	Val	Val	Glu
145					150					155					160
Glu	Lys	Ala	Phe	Ser	Pro	Glu	Val	Ile	Pro	Met	Phe	Ser	Ala	Leu	Ser
				165					170					175	
Glu	Gly	Ala	Thr	Pro	Gln	Asp	Leu	Asn	Thr	Met	Leu	Asn	Thr	Val	Gly
			180					185					190		
Gly	His	Gln	Ala	Ala	Met	Gln	Met	Leu	Lys	Glu	Thr	Ile	Asn	Glu	Glu
		195					200					205			
Ala	Ala	Glu	Trp	Asp	Arg	Leu	His	Pro	Val	His	Ala	Gly	Pro	Ile	Ala
	210					215					220				
Pro	Gly	Gln	Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr
225					230					235					240
Ser	Thr	Leu	Gln	Glu	Gln	Ile	Gly	Trp	Met	Thr	Asn	Asn	Pro	Pro	Ile
				245					250					255	
Pro	Val	Gly	Glu	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys
			260					265					270		
Ile	Val	Arg	Met	Tyr	Ser	Pro	Ile	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly
		275						280				285			
Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Tyr	Lys	Thr	Leu
	290					295					300				
Arg	Ala	Glu	Gln	Ala	Ser	Gln	Asp	Val	Lys	Asn	Trp	Met	Thr	Glu	Thr
305					310					315					320
Leu	Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Lys	Ala
				325					330					335	
Leu	Gly	Pro	Ala	Ala	Thr	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly
			340					345					350		
Val	Gly	Gly	Pro	Gly	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser
		355					360					365			
Gln	Val	Thr	Asn	Ser	Thr	Thr	Ile	Met	Met	Gln	Arg	Gly	Asn	Phe	Arg
	370					375					380				
Asp	Gln	Arg	Lys	Ile	Val	Lys	Cys	Phe	Asn	Cys	Gly	Lys	Glu	Gly	His
385					390					395					400

Ile Ala Arg Asn Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys
 405 410 415
 Gly Lys Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn
 420 425 430
 Phe Leu Gly Lys Ile Trp Pro Ser His Lys Gly Arg Pro Gly Asn Phe
 435 440 445
 Leu Gln Ser Arg Pro Glu Pro Thr Ala Pro Pro Glu Glu Ser Phe Arg
 450 455 460
 Phe Gly Glu Glu Thr Thr Thr Pro Ser Gln Lys Gln Glu Pro Ile Asp
 465 470 475 480
 Lys Glu Leu Tyr Pro Leu Ala Ser Leu Lys Ser Leu Phe Gly Asn Asp
 485 490 495
 Pro Ser Ser Gln
 500

<210> 126
 <211> 1503
 <212> DNA
 <213> Human immunodeficiency virus

<400> 126
 atgggcgccc ggcgctccgt gctgtccggc ggcaagctgg acaagtggga gaagatccgc 60
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 ctggagcgct tcgccgtgaa ccccggcctg ctggagacct ccgagggctg ccgccagatc 180
 ctggggccagc tgcagcccg cctgcagacc ggctccgagg agctgcgctc cctgtacaac 240
 accgtggcca ccctgtactg cgtgcaccag cgcctcgagg tgaaggacac caaggaggcc 300
 ctggacaaga tcgaggagga gcagaacaag tccaagaaga aggcccagca ggccgcccgc 360
 gacaccggca actcctccca ggtgtcccag aactacccca tcgtgcagaa cctgcagggc 420
 cagatggtgc accaggccat ctccccccgc accctgaacg cctgggtgaa ggtggtggag 480
 gagaaggcct tctccccga ggtgatcccc atgttctccg ccctgtccga gggcgccacc 540
 ccccaggacc tgaacaccat gctgaacacc gtgggcggcc accaggccgc catgcagatg 600
 ctgaaggaga ccatcaacga ggaggccgcc gagtgggacc gcctgcaccc cgtgcacgcc 660
 ggccccatcg cccccggcca gatgcgcgag ccccgcggt cgcacatcgc cggcaccacc 720
 tccacctgc aggagcagat cggttgatg accaacaacc cccccatccc cgtgggcgag 780
 atctacaagc gctggatcat cctgggcctg aacaagatcg tgcgcatgta ctcccccatc 840
 tccatcctgg acatccgcca gggccccaag gagcccttc gcgactacgt ggaccgcttc 900
 tacaagacct tgcgcgccga gcaggcctcc caggacgtga agaactggat gaccgagacc 960
 ctgctggtgc agaacgccaa ccccgactgc aagaccatcc tgaaggccct gggccccgcc 1020
 gccaccctgg aggagatgat gaccgcctgc cagggcgtgg gcggccccgg ccacaaggcc 1080
 cgcgtgctgg ccgaggccat gtcccagggtg accaactcca ccaccatcat gatgcagcgc 1140
 ggcaacttcc gcgaccagcg caagatcgtg aagtgttca actgcggcaa ggagggccac 1200
 atcgccccga actgccgcgc cccccgcaag aagggtgct ggaagtgcgg caaggagggc 1260
 caccagatga aggactgcac cgagcgccag gccaaacttc tgggcaagat ctggccctcc 1320
 cacaagggcc gccccggcaa ctctctgcag tcccgccccg agcccaccgc ccccccgag 1380
 gagtccttcc gcttcggcga ggagaccacc accccctccc agaagcagga gcccatcgac 1440
 aaggagctgt accccctggc ctccctgaag tccctgttcg gcaacgacct ctccctccag 1500
 taa 1503

<210> 127

<211> 492

<212> PRT

<213> Human immunodeficiency virus

<400> 127

Met Gly Ala Arg Ala Ser Ile Leu Arg Gly Gly Lys Leu Asp Lys Trp
1 5 10 15

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys His Tyr Met Leu Lys
20 25 30

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
35 40 45

Gly Leu Leu Glu Thr Ser Glu Gly Cys Lys Gln Ile Ile Lys Gln Leu
50 55 60

Gln Pro Ala Leu Gln Thr Gly Thr Glu Glu Leu Arg Ser Leu Tyr Asn
65 70 75 80

Thr Val Ala Thr Leu Tyr Cys Val His Glu Lys Ile Glu Val Arg Asp
85 90 95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Gln
100 105 110

Gln Lys Thr Gln Gln Ala Lys Ala Ala Asp Gly Lys Val Ser Gln Asn
115 120 125

Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His Gln Ala Ile
130 135 140

Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu Glu Lys Ala
145 150 155 160

Phe Ser Pro Glu Val Ile Pro Met Phe Thr Ala Leu Ser Glu Gly Ala
165 170 175

Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln
180 185 190

Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu Ala Ala Glu
195 200 205

Trp Asp Arg Leu His Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln
210 215 220

Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu
225 230 235 240

Gln Glu Gln Ile Ala Trp Met Thr Ser Asn Pro Pro Ile Pro Val Gly
245 250 255

Asp Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg
260 265 270

Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Lys Gln Gly Pro Lys Glu

275	280	285
Pro Phe Arg Asp Tyr Val	Asp Arg Phe Phe Lys	Thr Leu Arg Ala Glu
290	295	300
Gln Ala Thr Gln Asp Val	Lys Asn Trp Met Thr	Asp Thr Leu Leu Val
305	310	315 320
Gln Asn Ala Asn Pro Asp	Cys Lys Thr Ile Leu Arg	Ala Leu Gly Pro
325	330	335
Gly Ala Thr Leu Glu Glu	Met Met Thr Ala Cys	Gln Gly Val Gly Gly
340	345	350
Pro Ser His Lys Ala Arg	Val Leu Ala Glu Ala	Met Ser Gln Ala Asn
355	360	365
Asn Thr Asn Ile Met Met	Gln Arg Ser Asn Phe	Lys Gly Pro Lys Arg
370	375	380
Ile Val Lys Cys Phe Asn	Cys Gly Lys Glu Gly	His Ile Ala Arg Asn
385	390	395 400
Cys Arg Ala Pro Arg Lys	Lys Gly Cys Trp Lys	Cys Gly Lys Glu Gly
405	410	415
His Gln Met Lys Asp Cys	Thr Glu Arg Gln Ala	Asn Phe Leu Gly Lys
420	425	430
Ile Trp Pro Ser His Lys	Gly Arg Pro Gly Asn	Phe Leu Gln Asn Arg
435	440	445
Pro Glu Pro Thr Ala Pro	Pro Ala Glu Ser Phe	Arg Phe Glu Glu Thr
450	455	460
Thr Pro Ala Pro Lys Gln	Glu Pro Lys Asp Arg	Glu Pro Leu Thr Ser
465	470	475 480
Leu Lys Ser Leu Phe Gly	Ser Asp Pro Leu Ser	Gln
485	490	

<210> 128

<211> 1479

<212> DNA

<213> Human immunodeficiency virus

<400> 128

```

atgggcgccc ggcctccat cctgcgcggc ggcaagctgg acaagtggga gaagatccgc 60
ctgcgccccg gcggcaagaa gcactacatg ctgaagcacc tgggtgtgggc ctcccgcgag 120
ctggagcgct tcgccctgaa ccccggcctg ctggagacct ccgagggctg caagcagatc 180
atcaagcagc tgcagcccgc cctgcagacc ggcaccgagg agctgcgctc cctgtacaac 240
accgtggcca ccctgtactg cgtgcacgag aagatcgagg tgcgcgacac caaggaggcc 300
ctggacaaga tcgaggagga gcagaacaag tcccagcaga agaccagca ggccaaggcc 360
gccgacggca aggtgtccca gaactacccc atcgtgcaga acctgcaggg ccagatggtg 420
caccaggcca tctccccccg caccctgaac gcctgggtga aggtgatcga ggagaaggcc 480
ttctcccccg aggtgatccc catgttcacc gcctgtccg agggcgccac cccccaggac 540

```

```

ctgaacacca tgctgaacac cgtgggcggc caccaggccg ccatgcagat gctgaaggac 600
accatcaacg aggaggccgc cgagtgggac cgcctgcacc ccgtgcacgc cggccccatc 660
gcccccgggc agatgcgcga gccccgcggc tccgacatcg ccggcaccac ctccaccctg 720
caggagcaga tcgcctggat gacctccaac ccccccatcc ccgtgggcga catctacaag 780
cgctggatca tcctgggcct gaacaagatc gtgcgcgatg actcccccg gtccatcctg 840
gacatcaagc agggcccaaa ggagcccttc cgcgactacg tggaccgctt cttcaagacc 900
ctgcgcgccc agcaggccac ccaggacgtg aagaactgga tgaccgacac cctgctgggtg 960
cagaacgcca accccgactg caagaccatc ctgcgcgccc tgggcccccg cgccaccctg 1020
gaggagatga tgaccgcctg ccagggcgtg ggcggccccct cccacaaggc ccgcgtgctg 1080
gccgaggcca tgtcccaggc caacaacacc aacatcatga tgcagcgctc caacttcaag 1140
ggccccaagc gcatcgtgaa gtgcttcaac tgcggcaagg agggccacat cgcccgaac 1200
tgccgcgccc cccgcaagaa gggctgctgg aagtgcggca aggagggcca ccagatgaag 1260
gactgcaccg agcgccaggc caacttctct ggcaagatct ggccctccca caagggccgc 1320
cccggcaact tcctgcagaa ccgccccgag cccaccgccc cccccgcga gtccttccgc 1380
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ctgaagtccc tgttcggctc cgacccctg tcccagtaa 1479

```

<210> 129

<211> 495

<212> PRT

<213> Human immunodeficiency virus

<400> 129

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Met Gly Ala Arg Ala Ser Ile Leu Arg Gly Gly Lys Leu Asp Thr Trp
  1             5             10             15

```

```

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys His Tyr Met Ile Lys
      20             25             30

```

```

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
      35             40             45

```

```

Gly Leu Leu Glu Thr Ser Glu Gly Cys Lys Gln Ile Met Lys Gln Leu
      50             55             60

```

```

Gln Pro Ala Leu Gln Thr Gly Thr Glu Glu Leu Arg Ser Leu Tyr Asn
      65             70             75             80

```

```

Thr Val Ala Thr Leu Tyr Cys Val His Glu Arg Ile Glu Val Arg Asp
      85             90             95

```

```

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Gln
      100            105            110

```

```

Gln Lys Thr Gln Gln Ala Glu Ala Ala Asp Gly Asp Asn Gly Lys Val
      115            120            125

```

```

Ser Gln Asn Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His
      130            135            140

```

```

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
      145            150            155            160

```

```

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Thr Ala Leu Ser
      165            170            175

```

Glu	Gly	Ala	Thr	Pro	Gln	Asp	Leu	Asn	Thr	Met	Leu	Asn	Thr	Val	Gly	180	185	190
Gly	His	Gln	Ala	Ala	Met	Gln	Met	Leu	Lys	Asp	Thr	Ile	Asn	Glu	Glu	195	200	205
Ala	Ala	Glu	Trp	Asp	Arg	Leu	His	Pro	Val	His	Ala	Gly	Pro	Val	Ala	210	215	220
Pro	Gly	Gln	Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr	225	230	235
Ser	Thr	Leu	Gln	Glu	Gln	Ile	Ala	Trp	Met	Thr	Ser	Asn	Pro	Pro	Ile	245	250	255
Pro	Val	Gly	Asp	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	260	265	270
Ile	Val	Arg	Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Lys	Gln	Gly	275	280	285
Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Thr	Leu	290	295	300
Arg	Ala	Glu	Gln	Ala	Thr	Gln	Asp	Val	Lys	Asn	Trp	Met	Thr	Asp	Thr	305	310	315
Leu	Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Arg	Ala	325	330	335
Leu	Gly	Pro	Gly	Ala	Thr	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly	340	345	350
Val	Gly	Gly	Pro	Gly	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser	355	360	365
Gln	Ala	Asn	Asn	Thr	Asn	Ile	Met	Met	Gln	Arg	Ser	Asn	Phe	Lys	Gly	370	375	380
Pro	Lys	Arg	Ile	Val	Lys	Cys	Phe	Asn	Cys	Gly	Lys	Glu	Gly	His	Ile	385	390	395
Ala	Arg	Asn	Cys	Arg	Ala	Pro	Arg	Lys	Lys	Gly	Cys	Trp	Lys	Cys	Gly	405	410	415
Lys	Glu	Gly	His	Gln	Met	Lys	Asp	Cys	Thr	Glu	Arg	Gln	Ala	Asn	Phe	420	425	430
Leu	Gly	Lys	Ile	Trp	Pro	Ser	His	Lys	Gly	Arg	Pro	Gly	Asn	Phe	Leu	435	440	445
Gln	Ser	Arg	Pro	Glu	Pro	Thr	Ala	Pro	Pro	Ala	Glu	Ser	Phe	Arg	Phe	450	455	460
Glu	Glu	Thr	Thr	Pro	Ala	Pro	Lys	Gln	Glu	Pro	Lys	Asp	Arg	Glu	Pro	465	470	475

Leu Thr Ser Leu Lys Ser Leu Phe Gly Ser Asp Pro Leu Ser Gln
485 490 495

<210> 130
<211> 1488
<212> DNA
<213> Human immunodeficiency virus

<400> 130
atgggcgccc gcgcctccat cctgcgcggc ggcaagctgg acacctggga gaagatccgc 60
ctgcgccccg gcggcaagaa gcactacatg atcaagcacc tgggtgtggg ctccccgcgag 120
ctggagcgct tcgccctgaa ccccggcctg ctggagacct ccgagggctg caagcagatc 180
atgaagcagc tgcagccgc cctgcagacc ggcaccgagg agctgcgctc cctgtacaac 240
accgtggcca ccctgtactg cgtgcacgag cgcacgagg tgcgcgacac caaggaggcc 300
ctggacaaga tcgaggagga gcagaacaag tcccagcaga agaccagca ggccgaggcc 360
gccgacggcg acaacggcaa ggtgtcccag aactacccca tcgtgcagaa cctgcagggc 420
cagatggtgc accaggccat ctccccccgc accctgaacg cctgggtgaa ggtggtggag 480
gagaaggcct tctccccga ggtgatcccc atgttcaccg ccctgtccga gggcgccacc 540
ccccaggacc tgaacacat gctgaacacc gtgggcggcc accaggccgc catgcagatg 600
ctgaaggaca ccatcaacga ggaggccgcc gagggggacc gcctgcaccc cgtgcacgcc 660
ggccccgtgg ccccggccca gatgcgcgag ccccgcggt cgcacatcgc cggcaccacc 720
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atctacaagc gctggatcat cctgggcctg aacaagatcg tgcgcatgta ctccccctg 840
tccatcctgg acatcaagca gggccccaag gagcccttc gcgactacgt ggaccgcttc 900
ttcaagacc tgcgcgccga gcaggccacc caggacgtga agaactggat gaccgacacc 960
ctgctggtgc agaagccaa cccgcactgc aagaccatcc tgcgcgccct gggccccggc 1020
gccaccctgg aggagatgat gaccgcctgc cagggcggtg gcggccccgg ccacaaggcc 1080
cgcgctgctg ccgaggccat gtcccaggcc aacaacacca acatcatgat gcagcgctcc 1140
aacttcaagg gcccgaagcg catcgtgaag tgcttcaact gcggcaagga gggccacatc 1200
gcccgaact gccgcgcccc ccgcaagaag ggctgctgga agtgcgga ggaggccac 1260
cagatgaagg actgcaccga gcgccaggcc aacttctctg gcaagatctg gccctccac 1320
aagggccgcc ccggcaactt cctgcagtcc cgcgccgagc ccaccgcccc ccccgccgag 1380
tccttcgct tcgaggagac ccccccgcc cccaagcagg agcccaagga ccgcgagccc 1440
ctgacctccc tgaagtcct gttcggctcc gacccctgt cccagtaa 1488

<210> 131
<211> 499
<212> PRT
<213> Human immunodeficiency virus

<400> 131
Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
1 5 10 15
Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Leu Lys
20 25 30
His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
35 40 45
Gly Leu Leu Glu Thr Ser Glu Gly Cys Lys Gln Ile Ile Gly Gln Leu
50 55 60
Gln Pro Ala Ile Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
65 70 75 80

Thr	Val	Ala	Thr	Leu	Tyr	Cys	Val	His	Glu	Arg	Ile	Glu	Val	Lys	Asp	
				85					90					95		
Thr	Lys	Glu	Ala	Leu	Glu	Lys	Ile	Glu	Glu	Glu	Gln	Asn	Lys	Ser	Lys	
			100					105					110			
Lys	Lys	Ala	Gln	Gln	Ala	Ala	Ala	Asp	Thr	Gly	Asn	Ser	Ser	Gln	Val	
		115					120					125				
Ser	Gln	Asn	Tyr	Pro	Ile	Val	Gln	Asn	Leu	Gln	Gly	Gln	Met	Val	His	
	130					135					140					
Gln	Ala	Ile	Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys	Val	Ile	Glu	
145					150					155					160	
Glu	Lys	Ala	Phe	Ser	Pro	Glu	Val	Ile	Pro	Met	Phe	Ser	Ala	Leu	Ser	
			165						170					175		
Glu	Gly	Ala	Thr	Pro	Gln	Asp	Leu	Asn	Thr	Met	Leu	Asn	Thr	Val	Gly	
		180						185					190			
Gly	His	Gln	Ala	Ala	Met	Gln	Met	Leu	Lys	Glu	Thr	Ile	Asn	Glu	Glu	
	195					200						205				
Ala	Ala	Glu	Trp	Asp	Arg	Leu	His	Pro	Val	His	Ala	Gly	Pro	Val	Ala	
	210					215					220					
Pro	Gly	Gln	Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr	
225					230					235					240	
Ser	Thr	Leu	Gln	Glu	Gln	Ile	Gly	Trp	Met	Thr	Ser	Asn	Pro	Pro	Ile	
			245					250						255		
Pro	Val	Gly	Glu	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	
		260						265					270			
Ile	Val	Arg	Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly	
		275					280					285				
Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Tyr	Lys	Thr	Leu	
	290					295					300					
Arg	Ala	Glu	Gln	Ala	Ser	Gln	Asp	Val	Lys	Asn	Trp	Met	Thr	Glu	Thr	
305					310					315					320	
Leu	Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Lys	Ala	
			325						330					335		
Leu	Gly	Pro	Glu	Ala	Thr	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly	
		340						345					350			
Val	Gly	Gly	Pro	Ser	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser	
		355					360					365				
Gln	Ala	Thr	Asn	Ser	Ala	Ala	Val	Met	Met	Gln	Arg	Gly	Asn	Phe	Lys	
	370					375					380					

Gly Pro Arg Lys Ile Ile Lys Cys Phe Asn Cys Gly Lys Glu Gly His
385 390 395 400

Ile Ala Lys Asn Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys
405 410 415

Gly Lys Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn
420 425 430

Phe Leu Gly Lys Ile Trp Pro Ser His Lys Gly Arg Pro Gly Asn Phe
435 440 445

Leu Gln Ser Arg Pro Glu Pro Thr Ala Pro Pro Ala Glu Ser Phe Gly
450 455 460

Phe Gly Glu Glu Ile Thr Pro Ser Gln Lys Gln Glu Gln Lys Asp Lys
465 470 475 480

Glu Leu Tyr Pro Leu Thr Ser Leu Lys Ser Leu Phe Gly Asn Asp Pro
485 490 495

Leu Ser Gln

<210> 132

<211> 1500

<212> DNA

<213> Human immunodeficiency virus

<400> 132

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ctggagcgct tcgccctgaa ccccggcctg ctggagacct ccgagggctg caagcagatc 180
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accgtggcca ccctgtactg cgtgcacgag cgcacgagg tgaaggacac caaggaggcc 300
ctggagaaga tcgaggagga gcagaacaag tccaagaaga aggccagca ggccgcccgc 360
gacaccggca actcctccca ggtgtcccag aactacccca tcgtgcagaa cctgcagggc 420
cagatggtgc accaggccat ctccccccgc accctgaacg cctgggtgaa ggtgatcgag 480
gagaaggcct tctccccca ggtgatcccc atgttctccg cctgtccga gggcgccacc 540
ccccaggacc tgaacaccat gctgaacacc gtgggcggcc accaggccgc catgcagatg 600
ctgaaggaga ccatcaacga ggaggccgcc gagtgggacc gcctgcaccc cgtgcacgcc 660
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tccatcctgg acatccgcca gggccccaa gaggccttc gcgactacgt ggaccgcttc 900
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ctgctggtgc agaacgcca ccccgactgc aagaccatcc tgaaggccct gggccccgag 1020
gccaccctgg aggagatgat gaccgcctgc cagggcgtgg gcggcccctc ccacaaggcc 1080
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cacaagggcc gccccggcaa cttcctgcag tcccgcccc agcccaccgc ccccccgcc 1380
gagtccttcg gcttcggcga ggagatcacc ccctcccaga agcaggagca gaaggacaag 1440
gagctgtacc ccctgacctc cctgaagtcc ctgttcggca acgacccct gtcccagtaa 1500

<210> 133
<211> 492
<212> PRT
<213> Human immunodeficiency virus

<400> 133

Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
1 5 10 15

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Met Lys
20 25 30

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asp Pro
35 40 45

Gly Leu Leu Glu Thr Ser Glu Gly Cys Gln Lys Ile Ile Gly Gln Leu
50 55 60

Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
65 70 75 80

Thr Val Ala Val Leu Tyr Cys Val His Gln Lys Val Glu Val Lys Asp
85 90 95

Thr Lys Glu Ala Leu Glu Lys Leu Glu Glu Glu Gln Asn Lys Ser Gln
100 105 110

Gln Lys Thr Gln Gln Ala Ala Ala Asp Lys Gly Val Ser Gln Asn Tyr
115 120 125

Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His Gln Ala Ile Ser
130 135 140

Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu Glu Lys Ala Phe
145 150 155 160

Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr
165 170 175

Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln Ala
180 185 190

Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu Ala Ala Glu Trp
195 200 205

Asp Arg Leu His Pro Val His Ala Gly Pro Ile Pro Pro Gly Gln Met
210 215 220

Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln
225 230 235 240

Glu Gln Ile Gln Trp Met Thr Ser Asn Pro Pro Val Pro Val Gly Asp
245 250 255

Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met

260	265	270
Tyr Ser Pro Val Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro		
275	280	285
Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu Arg Ala Glu Gln		
290	295	300
Ala Thr Gln Glu Val Lys Gly Trp Met Thr Asp Thr Leu Leu Val Gln		
305	310	315
Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Gly		
325	330	335
Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly Pro		
340	345	350
Gly His Lys Ala Arg Val Leu Ala Glu Ala Met Ser Gln Ala Thr Asn		
355	360	365
Thr Ala Ile Met Met Gln Lys Ser Asn Phe Lys Gly Gln Arg Arg Ile		
370	375	380
Val Lys Cys Phe Asn Cys Gly Lys Glu Gly His Ile Ala Lys Asn Cys		
385	390	395
Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Arg Glu Gly His		
405	410	415
Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu Gly Lys Ile		
420	425	430
Trp Pro Ser Asn Lys Gly Arg Pro Gly Asn Phe Leu Gln Ser Arg Pro		
435	440	445
Glu Pro Thr Ala Pro Pro Ala Glu Ser Phe Gly Phe Arg Glu Glu Ile		
450	455	460
Thr Pro Ser Pro Lys Gln Glu Gln Lys Asp Glu Gly Leu Tyr Pro Pro		
465	470	475
Leu Ala Ser Leu Lys Ser Leu Phe Gly Asn Asp Pro		
485	490	

<210> 134

<211> 1479

<212> DNA

<213> Human immunodeficiency virus

<400> 134

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ctggagcgct tcgccctgga ccccggcctg ctggagacct ccgagggctg ccagaagatc 180
atcgccagc tgcagccctc cctgcagacc ggctccgagg agctgcgctc cctgtacaac 240
accgtggccg tgctgtactg cgtgcaccag aaggtggagg tgaaggacac caaggaggcc 300
ctggagaagc tggaggagga gcagaacaag tcccagcaga agaccagca ggccgcccgc 360

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gacaagggcg tgtcccagaa ctaccccatc gtgcagaacc tgcagggcca gatggtgcac 420
caggccatct cccccgcac cctgaacgcc tgggtgaagg tgatcgagga gaaggccttc 480
tcccccgagg tgatccccat gttctccgcc ctgtccgagg gcgccacccc ccaggacctg 540
aacaccatgc tgaacaccgt gggcgggccac caggccgcca tgcagatgct gaaggacacc 600
atcaacgagg aggccgcca gtgggaccgc ctgcaccccg tgcacgcccg ccccatcccc 660
cccggccaga tgcgcgagcc ccgcggctcc gacatcgccg gcaccacctc caccctgcag 720
gagcagatcc agtggatgac ctccaacccc cccgtgcccg tgggcgacat ctacaagcgc 780
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cgcgccgagc aggccaccca ggaggtgaag ggctggatga ccgacaccct gctggtgcag 960
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gagatgatga ccgcctgccg gggcggtggc ggccccggcc acaaggcccg cgtgctggcc 1080
gaggccatgt cccaggccac caacaccgcc atcatgatgc agaagtccaa cttcaagggc 1140
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ggcaacttcc tgcagtcccg ccccgagccc accgcccccc ccgccgagtc cttcggtctc 1380
cgcgaggaga tcaccccctc ccccaagcag gagcagaagg acgagggcct gtaccccccc 1440
ctggcctccc tgaagtcctt gttcggcaac gaccctaa 1479

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<210> 135

<211> 497

<212> PRT

<213> Human immunodeficiency virus

<400> 135

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Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
 1             5             10            15

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Met Lys
      20             25             30

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
      35             40             45

Asp Leu Leu Glu Thr Ala Glu Gly Cys Gln Gln Ile Met Gly Gln Leu
      50             55             60

Gln Pro Ala Leu Gln Thr Gly Thr Glu Glu Leu Arg Ser Leu Phe Asn
      65             70             75            80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Val Lys Asp
      85             90             95

Thr Lys Glu Ala Leu Glu Glu Val Glu Lys Ile Gln Lys Lys Ser Gln
      100            105            110

Gln Lys Thr Gln Gln Ala Ala Met Asp Glu Gly Asn Ser Ser Gln Val
      115            120            125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ala Gln Gly Gln Met Val His
      130            135            140

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
      145            150            155            160

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Glu	Lys	Ala	Phe	Ser	Pro	Glu	Val	Ile	Pro	Met	Phe	Ser	Ala	Leu	Ser	165	170	175
Glu	Gly	Ala	Thr	Pro	Gln	Asp	Leu	Asn	Thr	Met	Leu	Asn	Thr	Val	Gly	180	185	190
Gly	His	Gln	Ala	Ala	Met	Gln	Met	Leu	Lys	Asp	Thr	Ile	Asn	Glu	Glu	195	200	205
Ala	Ala	Glu	Trp	Asp	Arg	Met	His	Pro	Gln	Gln	Ala	Gly	Pro	Ile	Pro	210	215	220
Pro	Gly	Gln	Ile	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr	225	230	235
Ser	Thr	Leu	Gln	Glu	Gln	Ile	Arg	Trp	Met	Thr	Ser	Asn	Pro	Pro	Ile	245	250	255
Pro	Val	Gly	Glu	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	260	265	270
Ile	Val	Arg	Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly	275	280	285
Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Thr	Leu	290	295	300
Arg	Ala	Glu	Gln	Ala	Thr	Gln	Glu	Val	Lys	Gly	Trp	Met	Thr	Asp	Thr	305	310	315
Leu	Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Arg	Ala	325	330	335
Leu	Gly	Pro	Gly	Ala	Thr	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly	340	345	350
Val	Gly	Gly	Pro	Ser	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser	355	360	365
Gln	Ala	Ser	Gly	Ala	Ala	Ala	Ala	Ile	Met	Met	Gln	Lys	Ser	Asn	Phe	370	375	380
Lys	Gly	Pro	Arg	Arg	Thr	Ile	Lys	Cys	Phe	Asn	Cys	Gly	Lys	Glu	Gly	385	390	395
His	Leu	Ala	Arg	Asn	Cys	Arg	Ala	Pro	Arg	Lys	Lys	Gly	Cys	Trp	Lys	405	410	415
Cys	Gly	Lys	Glu	Gly	His	Gln	Met	Lys	Asp	Cys	Thr	Glu	Arg	Gln	Ala	420	425	430
Asn	Phe	Leu	Gly	Lys	Ile	Trp	Pro	Ser	Asn	Lys	Gly	Arg	Pro	Gly	Asn	435	440	445
Phe	Leu	Gln	Asn	Arg	Pro	Glu	Pro	Thr	Ala	Pro	Pro	Ala	Glu	Ser	Phe	450	455	460

Gly Phe Gly Glu Glu Ile Ala Pro Ser Pro Lys Gln Glu Gln Lys Glu
 465 470 475 480

Lys Glu Leu Tyr Pro Leu Ala Ser Leu Lys Ser Leu Phe Gly Ser Asp
 485 490 495

Pro

<210> 136
 <211> 1494
 <212> DNA
 <213> Human immunodeficiency virus

<400> 136
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 ctggagcgct tcgccctgaa ccccgacctg ctggagaccg ccgagggctg ccagcagatc 180
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 ctggaggagg tggagaagat ccagaagaag tcccagcaga agaccagca ggccgccatg 360
 gacgagggca actcctccca ggtgtcccag aactacccca tcgtgcagaa cgcccagggc 420
 cagatggtgc accaggccat ctccccccgc accctgaacg cctgggtgaa ggtggtggag 480
 gagaaggcct tctccccga ggtgatcccc atgttctccg cctgtccga gggcgccacc 540
 cccagacc tgaacacat gctgaacacc gtgggcggcc accaggccgc catgcagatg 600
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 atctacaagc gctggatcat cctgggcctg aacaagatcg tgcgcatgta ctccccctg 840
 tccatcctgg acatccgccca gggccccaa gaggcccttc gcgactacgt ggaccgcttc 900
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 aaggagctgt accccctggc ctccctgaag tcctgttcg gctccgaccc ctaa 1494

<210> 137
 <211> 499
 <212> PRT
 <213> Human immunodeficiency virus

<400> 137
 Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
 1 5 10 15

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Leu Lys
 20 25 30

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
 35 40 45

Gly	Leu	Leu	Glu	Thr	Ala	Glu	Gly	Cys	Leu	Gln	Ile	Ile	Glu	Gln	Leu	50	55	60	
Gln	Pro	Ala	Ile	Lys	Thr	Gly	Thr	Glu	Glu	Leu	Gln	Ser	Leu	Phe	Asn	65	70	75	80
Thr	Val	Ala	Val	Leu	Tyr	Cys	Val	His	Gln	Arg	Ile	Asp	Val	Lys	Asp	85	90	95	
Thr	Lys	Glu	Ala	Leu	Gly	Lys	Ile	Glu	Glu	Ile	Gln	Asn	Lys	Ser	Gln	100	105	110	
Gln	Lys	Thr	Gln	Gln	Ala	Ala	Ala	Asp	Lys	Glu	Lys	Asp	Asn	Lys	Val	115	120	125	
Ser	Gln	Asn	Tyr	Pro	Ile	Val	Gln	Asn	Ala	Gln	Gly	Gln	Met	Val	His	130	135	140	
Gln	Ala	Ile	Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys	Val	Val	Glu	145	150	155	160
Glu	Lys	Ala	Phe	Ser	Pro	Glu	Val	Ile	Pro	Met	Phe	Ser	Ala	Leu	Ser	165	170	175	
Glu	Gly	Ala	Thr	Pro	Gln	Asp	Leu	Asn	Ala	Met	Leu	Asn	Thr	Val	Gly	180	185	190	
Gly	His	Gln	Ala	Ala	Met	Gln	Met	Leu	Lys	Asp	Thr	Ile	Asn	Glu	Glu	195	200	205	
Ala	Ala	Glu	Trp	Asp	Arg	Leu	His	Pro	Val	His	Ala	Gly	Pro	Ile	Pro	210	215	220	
Pro	Gly	Gln	Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr	225	230	235	240
Ser	Thr	Leu	Gln	Glu	Gln	Ile	Ala	Trp	Met	Thr	Gly	Asn	Pro	Pro	Ile	245	250	255	
Pro	Val	Gly	Asp	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	260	265	270	
Ile	Val	Arg	Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Lys	Gln	Gly	275	280	285	
Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Thr	Leu	290	295	300	
Arg	Ala	Glu	Gln	Ala	Thr	Gln	Asp	Val	Lys	Asn	Trp	Met	Thr	Asp	Thr	305	310	315	320
Leu	Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Arg	Ala	325	330	335	
Leu	Gly	Gln	Gly	Ala	Ser	Ile	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly	340	345	350	

Val Gly Gly Pro Ser His Lys Ala Arg Val Leu Ala Glu Ala Met Ser
355 360 365

Gln Val Thr Asn Ala Asn Ala Ala Ile Met Met Gln Lys Gly Asn Phe
370 375 380

Lys Gly Pro Arg Lys Ile Val Lys Cys Phe Asn Cys Gly Lys Glu Gly
385 390 395 400

His Ile Ala Arg Asn Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys
405 410 415

Cys Gly Arg Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala
420 425 430

Asn Phe Leu Gly Lys Ile Trp Pro Ser Ser Lys Gly Arg Pro Gly Asn
435 440 445

Phe Leu Gln Ser Arg Pro Glu Pro Thr Ala Pro Pro Ala Glu Ser Phe
450 455 460

Gly Phe Gly Glu Glu Met Thr Pro Ser Pro Lys Gln Glu Leu Lys Asp
465 470 475 480

Lys Glu Pro Pro Leu Ala Ser Leu Arg Ser Leu Phe Gly Asn Asp Pro
485 490 495

Leu Ser Gln

<210> 138

<211> 1500

<212> DNA

<213> Human immunodeficiency virus

<400> 138

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<210> 139

<211> 495

<212> PRT

<213> Human immunodeficiency virus

<400> 139

Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Thr Trp
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Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Leu Lys
20 25 30

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
35 40 45

Ser Leu Leu Glu Thr Thr Glu Gly Cys Arg Gln Ile Ile Arg Gln Leu
50 55 60

Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Lys Ser Leu Phe Asn
65 70 75 80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Val Arg Asp
85 90 95

Thr Lys Glu Ala Leu Asp Lys Leu Glu Glu Glu Gln Asn Lys Ser Gln
100 105 110

Gln Lys Thr Gln Gln Glu Thr Ala Asp Lys Gly Val Ser Gln Asn Tyr
115 120 125

Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His Gln Ala Leu Ser
130 135 140

Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu Glu Lys Ala Phe
145 150 155 160

Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr
165 170 175

Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln Ala
180 185 190

Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu Ala Ala Glu Trp
195 200 205

Asp Arg Leu His Pro Val His Ala Gly Pro Ile Pro Pro Gly Gln Met
210 215 220

Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln

225		230		235		240
Glu Gln Ile Thr Trp Met Thr Ser Asn Pro Pro Val Pro Val Gly Glu						
		245		250		255
Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met						
		260		265		270
Tyr Ser Pro Val Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro						
		275		280		285
Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu Arg Ala Glu Gln						
		290		295		300
Ala Thr Gln Glu Val Lys Asn Trp Met Thr Asp Thr Leu Leu Val Gln						
		305		310		315
Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Gly						
		325		330		335
Ala Ser Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly Pro						
		340		345		350
Gly His Lys Ala Arg Ile Leu Ala Glu Ala Met Ser Gln Val Thr Asn						
		355		360		365
Thr Ala Val Met Met Gln Arg Gly Asn Phe Lys Gly Gln Arg Lys Ile						
		370		375		380
Ile Lys Cys Phe Asn Cys Gly Lys Glu Gly His Ile Ala Arg Asn Cys						
		385		390		395
Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Lys Glu Gly His						
		405		410		415
Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu Gly Lys Ile						
		420		425		430
Trp Pro Ser Asn Lys Gly Arg Pro Gly Asn Phe Leu Gln Ser Arg Pro						
		435		440		445
Glu Pro Thr Ala Pro Pro Ala Glu Ser Phe Gly Phe Gly Glu Glu Ile						
		450		455		460
Thr Pro Ser Pro Arg Gln Glu Thr Lys Asp Lys Glu Gln Gly Pro Pro						
		465		470		475
Leu Thr Ser Leu Lys Ser Leu Phe Gly Asn Asp Pro Leu Ser Gln						
		485		490		495

<210> 140

<211> 1488

<212> DNA

<213> Human immunodeficiency virus

<400> 140

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ctggagcgct tcgccttgaa cccctccctg ctggagacca ccgagggtg ccgccagatc 180
atccgccagc tgcagccctc cctgcagacc ggctccgagg agctgaagtc cctgttcaac 240
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gacaagggcg tgtcccagaa ctaccccatc gtgcagaacc tgcagggccca gatggtgcac 420
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ggcgaggaga tcaccccctc cccccgccag gagaccaagg acaaggagca gggccccccc 1440
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<210> 141

<211> 498

<212> PRT

<213> Human immunodeficiency virus

<400> 141

Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
1 5 10 15

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Met Lys
20 25 30

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
35 40 45

Gly Leu Leu Glu Thr Ala Glu Gly Cys Gln Gln Ile Ile Glu Gln Leu
50 55 60

Gln Ser Thr Leu Lys Thr Gly Ser Glu Glu Leu Lys Ser Leu Phe Asn
65 70 75 80

Thr Val Ala Thr Leu Trp Cys Val His Gln Arg Ile Glu Val Lys Asp
85 90 95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Val Gln Asn Lys Ser Gln
100 105 110

Gln Lys Thr Gln Gln Ala Ala Ala Gly Thr Gly Ser Ser Ser Lys Val
115 120 125

Ser	Gln	Asn	Tyr	Pro	Ile	Val	Gln	Asn	Ala	Gln	Gly	Gln	Met	Val	His	130	135	140	
Gln	Pro	Leu	Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys	Val	Val	Glu	145	150	155	160
Glu	Lys	Gly	Phe	Asn	Pro	Glu	Val	Ile	Pro	Met	Phe	Ser	Ala	Leu	Ser	165	170	175	
Glu	Gly	Ala	Thr	Pro	Gln	Asp	Leu	Asn	Met	Met	Leu	Asn	Ile	Val	Gly	180	185	190	
Gly	His	Gln	Ala	Ala	Met	Gln	Met	Leu	Lys	Glu	Thr	Ile	Asn	Glu	Glu	195	200	205	
Ala	Ala	Glu	Trp	Asp	Arg	Val	His	Pro	Val	His	Ala	Gly	Pro	Ile	Pro	210	215	220	
Pro	Gly	Gln	Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr	225	230	235	240
Ser	Thr	Leu	Gln	Glu	Gln	Ile	Gly	Trp	Met	Thr	Asn	Asn	Pro	Pro	Ile	245	250	255	
Pro	Val	Gly	Asp	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	260	265	270	
Ile	Val	Arg	Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly	275	280	285	
Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Tyr	Lys	Thr	Leu	290	295	300	
Arg	Ala	Glu	Gln	Ala	Thr	Gln	Glu	Val	Lys	Asn	Trp	Met	Thr	Glu	Thr	305	310	315	320
Leu	Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Ser	Ile	Leu	Lys	Ala	325	330	335	
Leu	Gly	Thr	Gly	Ala	Thr	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly	340	345	350	
Val	Gly	Gly	Pro	Ser	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser	355	360	365	
Gln	Ala	Gln	His	Ala	Asn	Ile	Met	Met	Gln	Arg	Gly	Asn	Phe	Lys	Gly	370	375	380	
Gln	Lys	Arg	Ile	Lys	Cys	Phe	Asn	Cys	Gly	Lys	Glu	Gly	His	Leu	Ala	385	390	395	400
Arg	Asn	Cys	Arg	Ala	Pro	Arg	Lys	Lys	Gly	Cys	Trp	Lys	Cys	Gly	Lys	405	410	415	
Glu	Gly	His	Gln	Met	Lys	Asp	Cys	Thr	Glu	Arg	Gln	Ala	Asn	Phe	Leu	420	425	430	

Gly Lys Ile Trp Pro Ser Asn Lys Gly Arg Pro Gly Asn Phe Pro Gln
 435 440 445

Ser Arg Pro Glu Pro Thr Ala Pro Pro Ala Glu Asn Trp Gly Met Gly
 450 455 460

Glu Glu Ile Thr Ser Leu Pro Lys Gln Glu Gln Lys Asp Lys Glu His
 465 470 475 480

Pro Pro Pro Leu Val Ser Leu Lys Ser Leu Phe Gly Asn Asp Pro Leu
 485 490 495

Ser Gln

<210> 142
 <211> 1497
 <212> DNA
 <213> Human immunodeficiency virus

<400> 142
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 ctgcgccccg gcggcaagaa gaagtaccgc atgaagcacc tgggtgtgggc ctcccgcgag 120
 ctggagcgct tcgccctgaa ccccggcctg ctggagaccg ccgagggctg ccagcagatc 180
 atcgagcagc tgcagtcac cctgaagacc ggctccgagg agctgaagtc cctgttcaac 240
 accgtggcca ccctgtggtg cgtgcaccag cgcacgagg tgaaggacac caaggaggcc 300
 ctggacaaga tcgaggaggt gcagaacaag tcccagcaga agaccagca ggccgcgcgc 360
 ggcaccggct cctcctccaa ggtgtcccag aactaccca tcgtgcagaa cgcccagggc 420
 cagatggtgc accagccct gtccccgc accctgaacg cctgggtgaa ggtggtggag 480
 gagaagggtc tcaacccga ggtgatcccc atgttctcgc cctgtccga gggcgccacc 540
 ccccaggacc tgaacatgat gctgaacatc gtgggcggcc accaggccgc catgcagatg 600
 ctgaaggaga ccatcaacga ggaggccgcc gagtgggacc gcgtgcaccc cgtgcacgcc 660
 ggccccatcc ccccggcc gatgcgcgag ccccgcggt cgcacatcgc cggcaccacc 720
 tccaccctgc aggagcagat cggctggatg accaacaacc ccccatccc cgtgggcgac 780
 atctacaagc gctggatcat cctgggcctg aacaagatcg tgcgcatgta ctccccctg 840
 tccatcctgg acatccgcca gggccccaag gagcccttc gcgactacgt ggaccgcttc 900
 tacaagaccc tgcgcgccga gcaggccacc caggaggtga agaactggat gaccgagacc 960
 ctgctggtgc agaacgcaa cccgactgc aagtccatcc tgaaggccct gggcaccggc 1020
 gccaccctgg aggagatgat gaccgcctgc cagggcgtgg gcggccctc ccacaaggcc 1080
 cgcgtgctgg ccgaggccat gtcccaggcc cagcacgcca acatcatgat gcagcgcggc 1140
 aacttcaagg gccagaagcg catcaagtgc ttcaactgcg gcaaggagg ccacctggcc 1200
 cgcaactgcc gcgcccccg caagaagggc tgctggaagt gcggcaagga gggccaccag 1260
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 ggccgccccg gcaacttccc ccagtccgc cccgagccca ccgcccccc cgccgagaac 1380
 tggggcatgg gcgaggagat cacctccctg cccaagcagg agcagaagga caaggagcac 1440
 ccccccccc tggtgtccct gaagtccctg ttcggaacg acccctgtc ccagtaa 1497

<210> 143
 <211> 492
 <212> PRT
 <213> Human immunodeficiency virus

<400> 143
 Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
 1 5 10 15

Glu	Lys	Ile	Arg	Leu	Arg	Pro	Gly	Gly	Lys	Lys	Lys	Tyr	Arg	Leu	Lys			
			20					25					30					
His	Leu	Val	Trp	Ala	Ser	Arg	Glu	Leu	Glu	Arg	Phe	Ala	Leu	Asn	Pro			
		35					40				45							
Gly	Leu	Leu	Glu	Thr	Ala	Glu	Gly	Cys	Gln	Gln	Ile	Met	Glu	Gln	Leu			
	50					55					60							
Gln	Ser	Ala	Leu	Arg	Thr	Gly	Ser	Glu	Glu	Leu	Lys	Ser	Leu	Tyr	Asn			
	65				70					75					80			
Thr	Val	Ala	Thr	Leu	Trp	Cys	Val	His	Gln	Arg	Ile	Asp	Ile	Lys	Asp			
				85					90					95				
Thr	Lys	Glu	Ala	Leu	Asp	Lys	Ile	Glu	Glu	Val	Gln	Asn	Lys	Ser	Lys			
			100					105					110					
Gln	Lys	Thr	Gln	Gln	Ala	Ala	Ala	Ala	Thr	Gly	Ser	Ser	Ser	Gln	Asn			
		115					120					125						
Tyr	Pro	Ile	Val	Gln	Asn	Ala	Gln	Gly	Gln	Met	Thr	His	Gln	Ser	Met			
	130					135					140							
Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys	Val	Ile	Glu	Glu	Lys	Ala			
	145				150					155					160			
Phe	Ser	Pro	Glu	Val	Ile	Pro	Met	Phe	Ser	Ala	Leu	Ser	Glu	Gly	Ala			
			165					170						175				
Thr	Pro	Gln	Asp	Leu	Asn	Met	Met	Leu	Asn	Ile	Val	Gly	Gly	His	Gln			
		180						185					190					
Ala	Ala	Met	Gln	Met	Leu	Lys	Asp	Thr	Ile	Asn	Glu	Glu	Ala	Ala	Glu			
		195					200					205						
Trp	Asp	Arg	Val	His	Pro	Val	His	Ala	Gly	Pro	Ile	Pro	Pro	Gly	Gln			
	210				215						220							
Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr	Ser	Thr	Leu			
	225				230					235					240			
Gln	Glu	Gln	Ile	Gly	Trp	Met	Thr	Ser	Asn	Pro	Pro	Ile	Pro	Val	Gly			
			245						250					255				
Glu	Ile	Tyr	Lys	Arg	Trp	Ile	Val	Leu	Gly	Leu	Asn	Lys	Ile	Val	Arg			
		260						265					270					
Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly	Pro	Lys	Glu			
		275					280					285						
Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Thr	Leu	Arg	Ala	Glu			
	290					295					300							
Gln	Ala	Thr	Gln	Glu	Val	Lys	Asn	Trp	Met	Thr	Glu	Thr	Leu	Leu	Val			
	305				310					315					320			


```

cagaacgcca accccgactg caagtccatc ctgcgcgccc tgggccccgg cgccaccctg 1020
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gccgaggcca tgtcccaggt gcagcagtcc aacatcatga tgcagcgcgg caacttccgc 1140
ggccagcgca ccatcaagtg cttcaactgc ggcaaggagg gccacctggc ccgcaactgc 1200
aaggcccccc gcaagaaggg ctgctggaag tgcggcaagg agggccacca gatgaaggac 1260
tgcaccgagc gccaggccaa cttcctgggc aagatctggc cctcctccaa gggccgcccc 1320
ggcaacttcc ccaggtcccg ccccagagccc accgcccccc ccgccgagtc cttcggcatg 1380
ggcgaggaga tcacctctc cccaagcag gagccccgag acaagggcct gtaccccccc 1440
ctgacctccc tgaagtcctt gttcggcaac gaccctaa 1479

```

<210> 145

<211> 498

<212> PRT

<213> Human immunodeficiency virus

<400> 145

```

Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
  1              5              10              15

```

```

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Ile Lys
      20              25              30

```

```

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
      35              40              45

```

```

Ser Leu Leu Glu Thr Ser Glu Gly Cys Gln Gln Ile Leu Glu Gln Leu
      50              55              60

```

```

Gln Pro Thr Leu Lys Thr Gly Ser Glu Glu Leu Lys Ser Leu Tyr Asn
      65              70              75              80

```

```

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp
      85              90              95

```

```

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Ile Gln Asn Lys Ser Lys
      100             105             110

```

```

Gln Lys Thr Gln Gln Ala Ala Thr Gly Thr Gly Ser Ser Ser Lys Val
      115             120             125

```

```

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ala Gln Gly Gln Met Thr His
      130             135             140

```

```

Gln Ser Met Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu
      145             150             155             160

```

```

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
      165             170             175

```

```

Glu Gly Ala Thr Pro Gln Asp Leu Asn Met Met Leu Asn Ile Val Gly
      180             185             190

```

```

Gly His Gln Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu
      195             200             205

```

```

Ala Ala Glu Trp Asp Arg Leu His Pro Ala Gln Ala Gly Pro Phe Pro

```

210	215	220
Pro Gly Gln Met Arg	Glu Pro Arg Gly Ser	Asp Ile Ala Gly Thr Thr
225	230	235 240
Ser Thr Leu Gln	Glu Gln Ile Gly Trp Met Thr Ser Asn Pro Pro Ile	
	245	250 255
Pro Val Gly Asp Ile Tyr Lys Arg	Trp Ile Ile Leu Gly Leu Asn Lys	
	260	265 270
Ile Val Arg Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Arg Gln Gly		
	275	280 285
Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu		
	290	295 300
Arg Ala Glu Gln Ala Thr Gln Asp Val Lys Asn Trp Met Thr Glu Thr		
	305	310 315 320
Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Arg Ala		
	325	330 335
Leu Gly Ser Gly Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly		
	340	345 350
Val Gly Gly Pro Gly His Lys Ala Arg Val Leu Ala Glu Ala Met Ser		
	355	360 365
Gln Val Gln Asn Ala Asn Ile Met Met Gln Lys Ser Asn Phe Arg Gly		
	370	375 380
Pro Lys Arg Ile Lys Cys Phe Asn Cys Gly Lys Asp Gly His Leu Ala		
	385	390 395 400
Arg Asn Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Lys		
	405	410 415
Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu		
	420	425 430
Gly Arg Ile Trp Pro Ser Ser Lys Gly Arg Pro Gly Asn Phe Pro Gln		
	435	440 445
Ser Arg Pro Glu Pro Ser Ala Pro Pro Ala Glu Asn Phe Gly Met Gly		
	450	455 460
Glu Glu Ile Thr Pro Ser Leu Lys Gln Glu Gln Lys Asp Arg Glu Gln		
	465	470 475 480
His Pro Pro Ser Ile Ser Leu Lys Ser Leu Phe Gly Asn Asp Pro Leu		
	485	490 495
Ser Gln		

<210> 146
 <211> 1497
 <212> DNA
 <213> Human immunodeficiency virus

<400> 146
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 ctggagcgct tcgccctgaa cccctccctg ctggagacct ccgagggctg ccagcagatc 180
 ctggagcagc tgcagcccac cctgaagacc ggctccgagg agctgaagtc cctgtacaac 240
 accgtggcca cctgtactg cgtgcaccag cgcacgcaga tcaaggacac caaggaggcc 300
 ctggacaaga tcgaggagat ccagaacaag tccaagcaga agaccagca ggccgccacc 360
 ggcaccggct cctcctccaa ggtgtcccag aactacccca tcgtgcagaa cgcgccagggc 420
 cagatgaccc accagtccat gtccccccgc accctgaacg cctgggtgaa ggtgatcgag 480
 gagaaggcct tctccccga ggtgatcccc atgttctccg cctgtccga gggcgccacc 540
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 tccaccctgc aggagcagat cggctggatg acctccaacc ccccatccc cgtgggcgac 780
 atctacaagc gctggatcat cctgggcctg aacaagatcg tgcgcagtga ctccccctg 840
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 ctgctggtgc agaacgcaa ccccgactgc aagaccatcc tgcgcgccct gggctccggc 1020
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 cgcgctgctg ccgaggccat gtcccagggt cagaacgccg acatcatgat gcagaagtcc 1140
 aacttccgcg gcccacaagc catcaagtgc ttcaactgcy gcaaggacgg ccacctggcc 1200
 cgcaactgcc gcgccccccg caagaaggcc ttctgggaagt gcggcaagga gggccaccag 1260
 atgaaggact gcaccgagcg ccaggccaac ttctggggcc gcatctggcc ctctcccaag 1320
 ggccgccccg gcaacttccc ccagtcccgc cccgagccct ccgccccccc cgcgcgagaa 1380
 ttcggcattg gcgaggagat caccctctcc ctgaagcagg agcagaagga ccgcgagcag 1440
 cccccccct ccatctccct gaagtccttg ttcggaacg acccctgtc ccagtaa 1497

<210> 147
 <211> 500
 <212> PRT
 <213> Human immunodeficiency virus

<400> 147
 Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
 1 5 10 15
 Glu Arg Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Leu Lys
 20 25 30
 His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
 35 40 45
 Gly Leu Leu Glu Thr Ala Glu Gly Cys Gln Gln Leu Met Glu Gln Leu
 50 55 60
 Gln Ser Thr Leu Lys Thr Gly Ser Glu Glu Leu Lys Ser Leu Phe Asn
 65 70 75 80
 Thr Ile Ala Thr Leu Trp Cys Val His Gln Arg Ile Asp Val Lys Asp
 85 90 95

Thr	Lys	Glu	Ala	Leu	Asp	Lys	Val	Glu	Glu	Met	Gln	Asn	Lys	Ser	Lys
			100					105					110		
Gln	Lys	Thr	Gln	Gln	Ala	Ala	Ala	Asp	Thr	Gly	Gly	Ser	Ser	Asn	Val
		115					120					125			
Ser	Gln	Asn	Tyr	Pro	Ile	Val	Gln	Asn	Ala	Gln	Gly	Gln	Met	Val	His
	130					135					140				
Gln	Ser	Ile	Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys	Val	Ile	Glu
145					150					155					160
Glu	Lys	Ala	Phe	Ser	Pro	Glu	Val	Ile	Pro	Met	Phe	Ser	Ala	Leu	Ser
				165					170					175	
Glu	Gly	Ala	Thr	Pro	Gln	Asp	Leu	Asn	Met	Met	Leu	Asn	Ile	Val	Gly
			180					185					190		
Gly	His	Gln	Ala	Ala	Met	Gln	Met	Leu	Lys	Asp	Thr	Ile	Asn	Glu	Glu
		195					200					205			
Ala	Ala	Glu	Trp	Asp	Arg	Ala	His	Pro	Val	His	Ala	Gly	Pro	Ile	Pro
		210				215					220				
Pro	Gly	Gln	Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr
225					230					235					240
Ser	Thr	Leu	Gln	Glu	Gln	Ile	Gly	Trp	Met	Thr	Ser	Asn	Pro	Pro	Ile
				245					250					255	
Pro	Val	Gly	Glu	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys
			260					265					270		
Ile	Val	Arg	Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly
		275					280					285			
Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Cys	Leu
		290				295					300				
Arg	Ala	Glu	Gln	Ala	Thr	Gln	Glu	Val	Lys	Asn	Trp	Met	Thr	Glu	Thr
305					310					315					320
Leu	Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Ser	Ile	Leu	Lys	Ala
				325					330					335	
Leu	Gly	Thr	Gly	Ala	Thr	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly
			340					345					350		
Val	Gly	Gly	Pro	Ser	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser
		355					360					365			
Gln	Ala	Ser	Asn	Ala	Ala	Ala	Ala	Ile	Met	Met	Gln	Lys	Ser	Asn	Phe
		370				375					380				
Lys	Gly	Gln	Arg	Arg	Ile	Ile	Lys	Cys	Phe	Asn	Cys	Gly	Lys	Glu	Gly
385					390					395					400

His Leu Ala Arg Asn Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys
 405 410 415

Cys Gly Lys Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala
 420 425 430

Asn Phe Leu Gly Arg Met Trp Pro Ser Ser Lys Gly Arg Pro Gly Asn
 435 440 445

Phe Leu Gln Ser Arg Pro Glu Pro Thr Ala Pro Pro Ala Glu Ser Leu
 450 455 460

Glu Met Lys Glu Glu Thr Thr Ser Ser Pro Lys Gln Glu Pro Arg Asp
 465 470 475 480

Lys Glu Leu Tyr Pro Leu Thr Ser Leu Lys Ser Leu Phe Gly Ser Asp
 485 490 495

Pro Leu Ser Gln
 500

<210> 148

<211> 1503

<212> DNA

<213> Human immunodeficiency virus

<400> 148

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taa 1503

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<210> 149

<400> 149

000

<210> 150

<211> 497

<212> PRT

<213> Human immunodeficiency virus

<400> 150

Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Glu Trp
1 5 10 15

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Leu Lys
20 25 30

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
35 40 45

Gly Leu Leu Glu Thr Ala Glu Gly Cys Gln Gln Ile Ile Glu Gln Leu
50 55 60

Gln Ser Ala Leu Lys Thr Gly Ser Glu Glu Leu Lys Ser Leu Tyr Asn
65 70 75 80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Lys Val Thr Asp
85 90 95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Ile Gln Asn Lys Ser Lys
100 105 110

Gln Lys Ala Gln Gln Ala Ala Ala Thr Gly Asn Ser Ser Asn Leu
115 120 125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ala Gln Gly Gln Met Val His
130 135 140

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu
145 150 155 160

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
165 170 175

Glu Gly Ala Thr Pro Gln Asp Leu Asn Met Met Leu Asn Ile Val Gly
180 185 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu
195 200 205

Ala Ala Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Pro
210 215 220

Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225 230 235 240

Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Ser Asn Pro Pro Ile
245 250 255

Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys

260	265	270
Ile Val Arg Met Tyr Ser Pro	Val Ser Ile Leu Asp	Ile Arg Gln Gly
275	280	285
Pro Lys Glu Pro Phe Arg Asp	Tyr Val Asp Arg Phe Phe	Lys Thr Leu
290	295	300
Arg Ala Glu Gln Ala Thr Gln	Glu Val Lys Asn Trp Met Thr	Asp Thr
305	310	315 320
Leu Leu Val Gln Asn Ala Asn	Pro Asp Cys Lys Thr Ile Leu	Lys Ala
325	330	335
Leu Gly Pro Gly Ala Thr Leu	Glu Glu Met Met Thr Ala Cys	Gln Gly
340	345	350
Val Gly Gly Pro Gly His Lys	Ala Arg Val Leu Ala Glu Ala	Met Ser
355	360	365
Gln Ala Ser Gly Thr Glu Ala	Ala Ile Met Met Gln Lys Ser	Asn Phe
370	375	380
Lys Gly Pro Lys Arg Ser Ile	Lys Cys Phe Asn Cys Gly Lys	Glu Gly
385	390	395 400
His Leu Ala Arg Asn Cys Arg	Ala Pro Arg Lys Lys Gly Cys	Trp Lys
405	410	415
Cys Gly Lys Glu Gly His Gln	Met Lys Asp Cys Thr Glu Arg	Gln Ala
420	425	430
Asn Phe Leu Gly Lys Ile Trp	Pro Ser Asn Lys Gly Arg Pro	Gly Asn
435	440	445
Phe Leu Gln Asn Arg Pro Glu	Pro Thr Ala Pro Pro Ala Glu	Ser Phe
450	455	460
Gly Phe Gly Glu Glu Thr Ala	Pro Ser Pro Lys Gln Glu Pro	Lys Glu
465	470	475 480
Lys Glu Leu Tyr Pro Leu Ala	Ser Leu Lys Ser Leu Phe Gly	Asn Asp
485	490	495

Pro

<210> 151

<211> 1494

<212> DNA

<213> Human immunodeficiency virus

<400> 151

```

atgggcgcgc ggcctccgt gctgtccggc ggcaagctgg acgagtggga gaagatccgc 60
ctgcgccccg gcggcaagaa gaagtaccgc ctgaagcacc tgggtgtgggc ctcccgcgag 120
ctggagcgct tcgccttgaa ccccggcctg ctggagaccg ccgagggctg ccagcagatc 180
atcgagcagc tgcagtccgc cctgaagacc ggctccgagg agctgaagtc cctgtacaac 240

```

```

accgtggcca ccctgtactg cgtgcaccag cgcatacaagg tgaccgacac caaggaggcc 300
ctggacaaga tcgaggagat ccagaacaag tccaagcaga agggccagca ggccgcccgc 360
gccaccggca actcctccaa cctgtcccag aactacccca tcgtgcagaa cgcccagggc 420
cagatgggtgc accaggccat ctccccccgc accctgaacg cctgggtgaa ggtgatcgag 480
gagaaggcct tctccccga ggtgatcccc atgtttctcg cctgtccga gggcgccacc 540
ccccaggacc tgaacatgat gctgaacatc gtgggcggcc accaggccgc catgcagatg 600
ctgaaggaca ccatcaacga ggaggccgcc gagtgggacc gcgtgcaccc cgtgcacgcc 660
ggccccatcc cccccggcca gatgcgcgag ccccgcggt cgcacatcgc cggcaccacc 720
tccaccctgc aggagcagat cggctggatg acctccaacc ccccatccc cgtgggcgag 780
atctacaagc gctggatcat cctgggcctg aacaagatcg tgcgcatgta ctccccctg 840
tccatcctgg acatccgcca gggccccaag gagcccttcc gcgactacgt ggaccgcttc 900
ttcaagaccc tgcgcgccga gcaggccacc caggaggtga agaactggat gaccgacacc 960
ctgctgggtgc agaagccaa ccccgactgc aagaccatcc tgaaggccct gggccccggc 1020
gccaccctgg aggagatgat gaccgcctgc cagggcgtgg gcggccccgg ccacaaggcc 1080
cgcgtgctgg ccgaggccat gtcccaggcc tccggcaccg aggcgcctat catgatgcag 1140
aagtccaact tcaagggcc caagcgctcc atcaagtgt tcaactgcgg caaggagggc 1200
cacctggccc gcaactgccg cccccccgc aagaagggt gctggaagt cggcaaggag 1260
ggccaccaga tgaaggactg caccgagcgc caggccaact tcctgggcaa gatctggccc 1320
tccaacaagg gccgccccgg caacttctg cagaaccgcc ccgagccac cgcccccccc 1380
gccgagtcct tcggcttcgg cgaggagacc gcccctccc ccaagcagga gcccaaggag 1440
aaggagctgt acccctggc ctccctgaag tccctgttcg gcaacgaccc ctaa 1494

```

<210> 152

<211> 495

<212> PRT

<213> Human immunodeficiency virus

<400> 152

```

Met Gly Ala Arg Ala Ser Ile Leu Arg Gly Gly Lys Leu Asp Lys Trp
  1             5             10             15

```

```

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys His Tyr Met Leu Lys
      20             25             30

```

```

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
      35             40             45

```

```

Gly Leu Leu Glu Thr Ser Glu Gly Cys Lys Gln Ile Ile Lys Gln Leu
      50             55             60

```

```

Gln Pro Ala Leu Gln Thr Gly Thr Glu Glu Leu Arg Ser Leu Phe Asn
      65             70             75             80

```

```

Thr Val Ala Thr Leu Tyr Cys Val His Thr Glu Ile Asp Val Arg Asp
      85             90             95

```

```

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ile Gln
      100            105            110

```

```

Gln Lys Thr Gln Gln Ala Lys Glu Ala Asp Gly Lys Val Ser Gln Asn
      115            120            125

```

```

Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His Gln Pro Ile
      130            135            140

```

```

Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala

```


145		150		155		160
Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala						
		165		170		175
Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln						
		180		185		190
Ala Ala Met Gln Ile Leu Lys Asp Thr Ile Asn Glu Glu Ala Ala Glu						
		195		200		205
Trp Asp Arg Leu His Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln						
		210		215		220
Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Asn Leu						
		225		230		240
Gln Glu Gln Ile Ala Trp Met Thr Ser Asn Pro Pro Val Pro Val Gly						
		245		250		255
Asp Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg						
		260		265		270
Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Lys Gln Gly Pro Lys Glu						
		275		280		285
Pro Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu Arg Ala Glu						
		290		295		300
Gln Ala Thr Gln Asp Val Lys Asn Trp Met Thr Asp Thr Leu Leu Val						
		305		310		315
Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Arg Ala Leu Gly Pro						
		325		330		335
Gly Ala Ser Ile Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly						
		340		345		350
Pro Ser His Lys Ala Arg Val Leu Ala Glu Ala Met Ser Gln Thr Asn						
		355		360		365
Ser Thr Ile Leu Met Gln Arg Ser Asn Phe Lys Gly Ser Lys Arg Ile						
		370		375		380
Val Lys Cys Phe Asn Cys Gly Lys Glu Gly His Ile Ala Arg Asn Cys						
		385		390		400
Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Lys Glu Gly His						
		405		410		415
Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu Gly Lys Ile						
		420		425		430
Trp Pro Ser His Lys Gly Arg Pro Gly Asn Phe Leu Gln Ser Arg Pro						
		435		440		445
Glu Pro Thr Ala Pro Pro Glu Glu Ser Phe Arg Phe Gly Glu Glu Thr						

450

455

460

Thr Thr Pro Ser Gln Lys Gln Glu Pro Ile Asp Lys Glu Leu Tyr Pro
 465 470 475 480

Leu Thr Ser Leu Lys Ser Leu Phe Gly Asn Asp Pro Ser Ser Gln
 485 490 495

<210> 153

<211> 1488

<212> DNA

<213> Human immunodeficiency virus

<400> 153

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 ctgcgccccg gcggcaagaa gcactacatg ctgaagcacc tgggtgtggc ctcccgcgag 120
 ctggagcgct tcgccctgaa ccccggcctg ctggagacct ccgagggctg caagcagatc 180
 atcaagcagc tgacgcccgc cctgcagacc ggcaccgagg agctgcgctc cctgttcaac 240
 accgtggcca ccctgtactg cgtgcacacc gagatcgacg tgcgcgacac caaggaggcc 300
 ctggacaaga tcgaggagga gcagaacaag atccagcaga agaccagca ggccaaggag 360
 gccgacggca aggtgtccca gaactacccc atcgtgcaga acctgcaggg ccagatgggtg 420
 caccagccca tctccccccg caccctgaac gcctgggtga aggtgggtga ggagaaggcc 480
 ttctcccccg aggtgatccc catgttctcc gccctgtccg agggcgccac ccccaggac 540
 ctgaacacca tgctgaacac cgtgggcggc caccaggccg ccatgcagat cctgaaggac 600
 accatcaacg aggaggccgc cgagtgggac cgctgcacc ccgtgcacgc cggccccatc 660
 gccccggcc agatgcgcga gccccgcggc tccgacatcg ccggcaccac ctccaacctg 720
 caggagcaga tcgcctggat gacctccaac cccccgtgc ccgtgggcga catctacaag 780
 cgctggatca tcttgggcct gaacaagatc gtgcgcatgt actccccac ctccatcctg 840
 gacatcaagc agggccccaa ggagcccttc cgcgactacg tggaccgctt cttcaagacc 900
 ctgcgcgccc agcaggccac ccaggacgtg aagaactgga tgaccgacac cctgctgggtg 960
 cagaacgcca accccgactg caagaccatc ctgcgcgccc tgggccccgg cgcctccatc 1020
 gaggagatga tgaccgcctg ccagggcgtg ggcggccctt cccacaaggc ccgcgtgctg 1080
 gccgaggcca tgtcccagac caactccacc atcctgatgc agcgtccaa cttcaagggtc 1140
 tccaagcgca tcgtgaagtg cttcaactgc ggcaaggagg gccacatcgc ccgcaactgc 1200
 cgcgcccccc gcaagaaggg ctgctggaag tgcggcaagg agggccacca gatgaaggac 1260
 tgaccgagc gccaggccaa cttcctgggc aagatctggc cctcccacaa gggcgcccc 1320
 ggcaacttcc tgacgtcccc ccccgagccc accgcccccc ccgaggagtc cttccgcttc 1380
 ggcgaggaga ccaccacccc ctcccagaag caggagccca tcgacaagga gctgtacccc 1440
 ctgacctccc tgaagtccct gttcggcaac gacctctcct cccagtaa 1488

<210> 154

<211> 491

<212> PRT

<213> Human immunodeficiency virus

<400> 154

Met Gly Ala Arg Ala Ser Ile Leu Arg Gly Gly Lys Leu Asp Lys Trp
 1 5 10 15
 Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys His Tyr Met Leu Lys
 20 25 30
 His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
 35 40 45

Gly	Leu	Leu	Glu	Thr	Ser	Glu	Gly	Cys	Lys	Gln	Ile	Ile	Lys	Gln	Leu	50	55	60	
Gln	Pro	Ala	Leu	Gln	Thr	Gly	Thr	Glu	Glu	Leu	Arg	Ser	Leu	Phe	Asn	65	70	75	80
Thr	Val	Ala	Thr	Leu	Tyr	Cys	Val	His	Ala	Glu	Ile	Glu	Val	Arg	Asp	85	90	95	
Thr	Lys	Glu	Ala	Leu	Asp	Lys	Ile	Glu	Glu	Glu	Gln	Asn	Lys	Ile	Gln	100	105	110	
Gln	Lys	Thr	Gln	Gln	Ala	Lys	Glu	Ala	Asp	Glu	Lys	Val	Ser	Gln	Asn	115	120	125	
Tyr	Pro	Ile	Val	Gln	Asn	Leu	Gln	Gly	Gln	Met	Val	His	Gln	Pro	Leu	130	135	140	
Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys	Val	Val	Glu	Glu	Lys	Ala	145	150	155	160
Phe	Ser	Pro	Glu	Val	Ile	Pro	Met	Phe	Thr	Ala	Leu	Ser	Glu	Gly	Ala	165	170	175	
Thr	Pro	Gln	Asp	Leu	Asn	Thr	Met	Leu	Asn	Thr	Val	Gly	Gly	His	Gln	180	185	190	
Ala	Ala	Met	Gln	Met	Leu	Lys	Asp	Thr	Ile	Asn	Glu	Glu	Ala	Ala	Glu	195	200	205	
Trp	Asp	Arg	Leu	His	Pro	Val	His	Ala	Gly	Pro	Val	Ala	Pro	Gly	Gln	210	215	220	
Met	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr	Ser	Thr	Leu	225	230	235	240
Gln	Glu	Gln	Ile	Gly	Trp	Met	Thr	Asn	Asn	Pro	Pro	Ile	Pro	Val	Gly	245	250	255	
Glu	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	Ile	Val	Arg	260	265	270	
Met	Tyr	Ser	Pro	Thr	Ser	Ile	Leu	Asp	Ile	Lys	Gln	Gly	Pro	Lys	Glu	275	280	285	
Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Thr	Leu	Arg	Ala	Glu	290	295	300	
Gln	Ala	Thr	Gln	Asp	Val	Lys	Asn	Trp	Met	Thr	Asp	Thr	Leu	Leu	Val	305	310	315	320
Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Arg	Ala	Leu	Gly	Pro	325	330	335	
Gly	Ala	Ser	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly	Val	Gly	Gly	340	345	350	

Pro Ser His Lys Ala Arg Val Leu Ala Glu Ala Met Ser Gln Thr Asn
355 360 365

Asn Thr Ile Leu Met Gln Arg Ser Asn Phe Lys Gly Ser Lys Arg Ile
370 375 380

Val Lys Cys Phe Asn Cys Gly Lys Glu Gly His Ile Ala Lys Asn Cys
385 390 395 400

Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Lys Glu Gly His
405 410 415

Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu Gly Lys Ile
420 425 430

Trp Pro Ser His Lys Gly Arg Pro Gly Asn Phe Leu Gln Ser Arg Pro
435 440 445

Glu Pro Thr Ala Pro Pro Ala Glu Ser Phe Arg Phe Glu Glu Thr Thr
450 455 460

Pro Ala Pro Lys Gln Glu Pro Lys Asp Arg Glu Pro Leu Thr Ser Leu
465 470 475 480

Arg Ser Leu Phe Gly Ser Asp Pro Leu Ser Gln
485 490

<210> 155

<211> 1476

<212> DNA

<213> Human immunodeficiency virus

<400> 155

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ctggagcgct tcgccctgaa ccccggcctg ctggagacct ccgagggctg caagcagatc 180
atcaagcagc tgcagcccgc cctgcagacc ggcaccgagg agctgcgctc cctgttcaac 240
accgtggcca ccctgtactg cgtgcacgcc gagatcgagg tgcgcgacac caaggaggcc 300
ctggacaaga tcgaggagga gcagaacaag atccagcaga agaccagca ggccaaggag 360
gccgacgaga aggtgtccca gaactacccc atcgtgcaga acctgcaggg ccagatggtg 420
caccagcccc tgtccccccg caccctgaac gcctgggtga aggtggtgga ggagaaggcc 480
tttccccccg aggtgatccc catgttcacc gccctgtccg agggcgccac ccccaggac 540
ctgaacacca tgctgaacac cgtgggcggc caccaggccg ccatgcagat gctgaaggac 600
accatcaacg aggaggccgc cgagtgggac cgctgcacc ccgtgcacgc cggccccgtg 660
gcccccgcc agatgcgcga gccccgcggc tccgacatcg ccggcaccac ctccaccctg 720
caggagcaga tcggctggat gaccaacaac ccccccatcc ccgtgggcga gatctacaag 780
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gacatcaagc agggccccaa ggagcccttc cgcgactacg tggaccgctt cttcaagacc 900
ctgcgcgccc agcaggccac ccaggacgtg aagaactgga tgaccgacac cctgctggtg 960
cagaacgcca accccgactg caagaccatc ctgcgcgccc tgggccccgg cgcctccctg 1020
gaggagatga tgaccgcctg ccaggcgctg ggcggcccct cccacaaggc ccgcgtgctg 1080
gccgaggcca tgtcccagac caacaacacc atcctgatgc agcgtccaa cttcaagggc 1140
tccaagcgca tcgtgaagtg cttcaactgc ggcaaggagg gccacatcgc caagaactgc 1200
cgcgcccccc gcaagaaggg ctgctggaag tgcggcaagg agggccacca gatgaaggac 1260
tgaccgagc gccaggccaa cttcctgggc aagatctggc cctcccacaa gggccgcccc 1320
ggcaacttcc tgcagtcccc ccccgagccc accgcccccc ccgccgagtc cttccgcttc 1380

gaggagacca cccccgcccc caagcaggag cccaaggacc gcgagcccct gacctccctg 1440
cgctccctgt tcggctccga cccctgtcc cagtaa 1476

<210> 156
<211> 499
<212> PRT
<213> Human immunodeficiency virus

<400> 156
Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Glu Trp
1 5 10 15
Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Leu Lys
20 25 30
His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
35 40 45
Gly Leu Leu Glu Thr Ser Glu Gly Cys Lys Gln Ile Ile Gly Gln Leu
50 55 60
Gln Pro Ala Ile Gln Thr Gly Ser Glu Glu Ile Lys Ser Leu Tyr Asn
65 70 75 80
Thr Val Ala Thr Leu Tyr Cys Val His Glu Arg Ile Lys Val Thr Asp
85 90 95
Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Thr Lys Ser Lys
100 105 110
Lys Lys Ala Gln Gln Ala Thr Ala Asp Thr Gly Asn Ser Ser Gln Val
115 120 125
Ser Gln Asn Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His
130 135 140
Gln Pro Leu Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu
145 150 155 160
Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
165 170 175
Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
180 185 190
Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu
195 200 205
Ala Ala Glu Trp Asp Arg Leu His Pro Val Gln Ala Gly Pro Val Ala
210 215 220
Pro Gly Gln Ile Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225 230 235 240
Ser Thr Leu Gln Glu Gln Ile Arg Trp Met Thr Ser Asn Pro Pro Ile
245 250 255

Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
 260 265 270
 Ile Val Arg Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Arg Gln Gly
 275 280 285
 Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu
 290 295 300
 Arg Ala Glu Gln Ala Ser Gln Asp Val Lys Asn Trp Met Thr Glu Thr
 305 310 315 320
 Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala
 325 330 335
 Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
 340 345 350
 Val Gly Gly Pro Ser His Lys Ala Arg Val Leu Ala Glu Ala Met Ser
 355 360 365
 Gln Ala Thr Ser Gly Asn Ala Ile Met Met Gln Arg Gly Asn Phe Lys
 370 375 380
 Gly Pro Lys Lys Ile Ile Lys Cys Phe Asn Cys Gly Lys Glu Gly His
 385 390 395 400
 Ile Ala Lys Asn Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys
 405 410 415
 Gly Arg Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn
 420 425 430
 Phe Leu Gly Lys Ile Trp Pro Ser Asn Lys Gly Arg Pro Gly Asn Phe
 435 440 445
 Leu Gln Ser Arg Pro Glu Pro Thr Ala Pro Pro Ala Glu Ser Phe Gly
 450 455 460
 Phe Gly Glu Glu Ile Thr Pro Ser Gln Lys Gln Glu Gln Lys Asp Lys
 465 470 475 480
 Glu Leu His Pro Leu Ala Ser Leu Lys Ser Leu Phe Gly Asn Asp Pro
 485 490 495
 Leu Ser Gln

<210> 157

<211> 1500

<212> DNA

<213> Human immunodeficiency virus

<400> 157

atgggcgcgc ggcgcctccgt gctgtccggc ggcaagctgg acgagtggga gaagatccgc 60

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ctgcgccccg gcggcaagaa gaagtaccgc ctgaagcacc tgggtgtgggc ctccccgcgag 120
ctggagcgct tcgccctgaa ccccggcctg ctggagacct cggagggctg caagcagatc 180
atcggccagc tgcagcccg ccatccagacc ggctccgagg agatcaagtc cctgtacaac 240
accgtggcca ccctgtactg cgtgcacgag cgcatacaagg tgaccgacac caaggaggcc 300
ctggacaaga tcgaggagga gcagaccaag tccaagaaga aggcccagca ggccaccgcc 360
gacaccggca actcctccca ggtgtcccag aactacccca tcgtgcagaa cctgcagggc 420
cagatgggtgc accagcccct gtccccccgc accctgaacg cctgggtgaa ggtgatcgag 480
gagaaggcct tctccccga ggtgatcccc atgttctccg cctgtccga gggcgccacc 540
ccccaggacc tgaacaccat gctgaacacc gtgggcggcc accaggccgc catgcagatg 600
ctgaaggaga ccatcaacga ggaggccgcc gagggggacc gcctgcaccc cgtgcaggcc 660
ggccccgtgg ccccgggcca gatccgcgag ccccgcggt cgcacatcgc cggcaccacc 720
tccaccctgc aggagcagat ccgctggatg acctccaacc ccccatccc cgtgggcgag 780
atctacaagc gctggatcat cctgggcctg aacaagatcg tgcgcatgta ctccccctg 840
tccatcctgg acatccgcca gggccccaag gagcccttcc gcgactacgt ggaccgcttc 900
tacaagaccc tgcgcgccga gcaggcctcc caggacgtga agaactggat gaccgagacc 960
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caccagatga aggactgcac cgagcgccag gccaaattcc tgggcaagat ctggccctcc 1320
aacaagggcc gcccggcaa cttcctgcag tccgccccg agcccaccgc ccccccgcc 1380
gagtccttcg gcttcggcga ggagatcacc ccctcccaga agcaggagca gaaggacaag 1440
gagctgcacc ccctggcctc cctgaagtcc ctgttcggca acgacccct gtcccagtaa 1500

```

<210> 158

<211> 497

<212> PRT

<213> Human immunodeficiency virus

<400> 158

```

Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
  1              5              10              15

```

```

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Leu Lys
      20              25              30

```

```

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
      35              40              45

```

```

Ser Leu Leu Glu Thr Ala Glu Gly Cys Gln Gln Ile Met Gly Gln Leu
      50              55              60

```

```

Gln Pro Ala Leu Gly Thr Gly Thr Glu Glu Leu Arg Ser Leu Tyr Asn
      65              70              75              80

```

```

Thr Val Ala Thr Leu Tyr Cys Val His His Arg Ile Glu Val Lys Asp
      85              90              95

```

```

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Ile Gln Asn Lys Ser Lys
      100             105             110

```

```

Gln Lys Lys Gln Gln Ala Ala Ala Asp Thr Gly Asn Ser Ser Lys Val
      115             120             125

```

```

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ala Gln Gly Gln Met Val His

```

130	135	140
Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu 145 150 155 160		
Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser 165 170 175		
Glu Gly Ala Thr Pro Gln Asp Leu Asn Met Met Leu Asn Ile Val Gly 180 185 190		
Gly His Gln Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu 195 200 205		
Ala Ala Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Pro 210 215 220		
Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr 225 230 235 240		
Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Gly Asn Pro Pro Val 245 250 255		
Pro Val Gly Glu Ile Tyr Arg Arg Trp Ile Ile Leu Gly Leu Asn Lys 260 265 270		
Ile Val Arg Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Arg Gln Gly 275 280 285		
Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu 290 295 300		
Arg Ala Glu Gln Ala Thr Gln Glu Val Lys Ser Trp Met Thr Glu Thr 305 310 315 320		
Leu Leu Ile Gln Asn Ala Asn Pro Asp Cys Lys Ser Ile Leu Arg Ala 325 330 335		
Leu Gly Pro Gly Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly 340 345 350		
Val Gly Gly Pro Gly His Lys Ala Arg Val Leu Ala Glu Ala Met Ser 355 360 365		
Gln Val Gln Gln Thr Asn Ile Met Met Gln Arg Ser Asn Phe Lys Gly 370 375 380		
Gln Lys Arg Ile Lys Cys Phe Asn Cys Gly Lys Glu Gly His Leu Ala 385 390 395 400		
Arg Asn Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Lys 405 410 415		
Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu 420 425 430		
Gly Lys Ile Trp Pro Ser Ser Lys Gly Arg Pro Gly Asn Phe Leu Gln		

435

440

445

Ser Arg Pro Glu Pro Thr Ala Pro Pro Ala Glu Ser Phe Gly Phe Gly
 450 455 460

Glu Glu Ile Ala Pro Ser Pro Lys Gln Glu Pro Lys Glu Lys Glu Leu
 465 470 475 480

Tyr Pro Leu Thr Ser Leu Lys Ser Leu Phe Gly Ser Asp Pro Leu Ser
 485 490 495

Gln

<210> 159

<211> 1494

<212> DNA

<213> Human immunodeficiency virus

<400> 159

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atggggcgccc gcgcctccgt gctgtccggc ggcaagctgg acgcctggga gaagatccgc 60
ctgcgccccg gcggcaagaa gaagtaccgc ctgaagcacc tgggtgtggc ctcccgcgag 120
ctggagcgct tcgccttgaa cccctccctg ctggagaccg ccgagggctg ccagcagatc 180
atgggccagc tgcagcccg cctgggcacc ggcaccgagg agctgcgctc cctgtacaac 240
accgtggcca cctgtactg cgtgcaccac cgcacgagg tgaaggacac caaggaggcc 300
ctggacaaga tcgaggagat ccagaacaag tccaagcaga agaagcagca ggccgcccgc 360
gacaccggca actcctccaa ggtgtcccag aactacccca tcgtgcagaa cgcccagggc 420
cagatggtgc accaggccat ctcccccg cccctgaacg cctgggtgaa ggtggtggag 480
gagaaggcct tctccccga ggtgatccc atgttctccg ccctgtccga gggcgccacc 540
ccccaggacc tgaacatgat gctgaacatc gtgggcggcc accaggccgc catgcagatg 600
ctgaaggaca ccatcaacga ggaggccgcc gagtgggacc gcgtgcaccc cgtgcacgcc 660
ggccccatcc cccccggcca gatgcgcgag ccccgcggt ccgacatcgc cggcaccacc 720
tccaccctgc aggagcagat cggctggatg accggcaacc cccccgtgc cgtgggcgag 780
atctaccgcc gctggatcat cctgggcctg aacaagatcg tgcgcatgta ctccccctg 840
tccatcctgg acatccgcca gggccccaa gagcccttc gcgactacgt ggaccgcttc 900
ttcaagaccc tgcgcgccga gcaggccacc caggaggtga agtcctggat gaccgagacc 960
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gccaccctgg aggagatgat gaccgcctgc cagggcgtgg gcggccccg ccacaaggcc 1080
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cgcaactgcc gcgcccccg caagaagggc tgctggaagt gcggcaagga gggccaccag 1260
atgaaggact gcaccgagcg ccaggccaac ttctgggca agatctggcc ctctccaag 1320
ggccgccccg gcaacttct gcagtcctgc cccgagccca ccgcccccc cgccgagtcc 1380
ttcggttcg gcgaggagat cgccccctc cccaagcagg agcccaagga gaaggagctg 1440
taccctctga cctccctgaa gtccctgttc ggctccgacc ccctgtccca gtaa 1494

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<210> 160

<211> 492

<212> PRT

<213> Human immunodeficiency virus

<400> 160

Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Glu Leu Asp Arg Trp
 1 5 10 15

Glu	Lys	Ile	Arg	Leu	Arg	Pro	Gly	Gly	Lys	Lys	Lys	Tyr	Arg	Leu	Lys	20	25	30
His	Ile	Val	Trp	Ala	Ser	Arg	Glu	Leu	Glu	Arg	Phe	Ala	Val	Asn	Pro	35	40	45
Gly	Leu	Leu	Glu	Thr	Ser	Glu	Gly	Cys	Arg	Lys	Ile	Ile	Gly	Gln	Leu	50	55	60
Gln	Pro	Ser	Leu	Gln	Thr	Gly	Ser	Glu	Glu	Leu	Arg	Ser	Leu	Tyr	Asn	65	70	75
Thr	Ile	Ala	Val	Leu	Tyr	Phe	Val	His	Gln	Lys	Val	Glu	Val	Lys	Asp	85	90	95
Thr	Lys	Glu	Ala	Leu	Asp	Lys	Leu	Glu	Glu	Glu	Gln	Asn	Lys	Ser	Gln	100	105	110
Gln	Lys	Thr	Gln	Gln	Ala	Ala	Ala	Asp	Lys	Gly	Val	Ser	Gln	Asn	Tyr	115	120	125
Pro	Ile	Val	Gln	Asn	Leu	Gln	Gly	Gln	Met	Val	His	Gln	Ala	Leu	Ser	130	135	140
Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys	Val	Val	Glu	Glu	Lys	Ala	Phe	145	150	155
Ser	Pro	Glu	Val	Ile	Pro	Met	Phe	Ser	Ala	Leu	Ser	Glu	Gly	Ala	Thr	165	170	175
Pro	Gln	Asp	Leu	Asn	Thr	Met	Leu	Asn	Thr	Val	Gly	Gly	His	Gln	Ala	180	185	190
Ala	Met	Gln	Met	Leu	Lys	Asp	Thr	Ile	Asn	Glu	Glu	Ala	Ala	Glu	Trp	195	200	205
Asp	Arg	Leu	His	Pro	Val	His	Ala	Gly	Pro	Ile	Pro	Pro	Gly	Gln	Met	210	215	220
Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr	Ser	Thr	Leu	Gln	225	230	235
Glu	Gln	Ile	Gln	Trp	Met	Thr	Ser	Asn	Pro	Pro	Val	Pro	Val	Gly	Glu	245	250	255
Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	Ile	Val	Arg	Met	260	265	270
Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly	Pro	Lys	Glu	Pro	275	280	285
Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Thr	Leu	Arg	Ala	Glu	Gln	290	295	300
Ala	Thr	Gln	Glu	Val	Lys	Gly	Trp	Met	Thr	Asp	Thr	Leu	Leu	Val	Gln	305	310	315

Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Gly
 325 330 335
 Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly Pro
 340 345 350
 Gly His Lys Ala Arg Val Leu Ala Glu Ala Met Ser Gln Val Thr Asn
 355 360 365
 Thr Thr Val Met Met Gln Lys Ser Asn Phe Lys Gly Gln Arg Arg Ile
 370 375 380
 Val Lys Cys Phe Asn Cys Gly Lys Glu Gly His Ile Ala Lys Asn Cys
 385 390 395 400
 Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Arg Glu Gly His
 405 410 415
 Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu Gly Lys Ile
 420 425 430
 Trp Pro Ser Asn Lys Gly Arg Pro Gly Asn Phe Leu Gln Asn Arg Pro
 435 440 445
 Glu Pro Thr Ala Pro Pro Ala Glu Ser Phe Gly Phe Gly Glu Glu Ile
 450 455 460
 Thr Pro Ser Pro Lys Gln Glu Gln Lys Asp Glu Gly Leu Tyr Pro Pro
 465 470 475 480
 Leu Ala Ser Leu Lys Ser Leu Phe Gly Asn Asp Pro
 485 490

<210> 161
 <211> 1479
 <212> DNA
 <213> Human immunodeficiency virus

<400> 161
 atgggcgccc gcgcctccgt gctgtccggc ggcgagctgg accgctggga gaagatccgc 60
 ctgcgccccg gcggcaagaa gaagtaccgc ctgaagcaca tcgtgtgggc ctcccgcgag 120
 ctggagcgct tcgccgtgaa ccccggcctg ctggagacct ccgagggctg ccgcaagatc 180
 atcgccagc tgcagccctc cctgcagacc ggctccgagg agctgcgctc cctgtacaac 240
 accatcgccg tgctgtactt cgtgcaccag aaggtggagg tgaaggacac caaggaggcc 300
 ctggacaagc tggaggagga gcagaacaag tcccagcaga agaccagca ggccgcccgc 360
 gacaagggcg tgtcccagaa ctaccccatc gtgcagaacc tgcagggcca gatggtgcac 420
 caggccctgt ccccccgcac cctgaacgcc tgggtgaagg tgggtggagga gaaggccttc 480
 tcccccgagg tgatccccat gttctccgcc ctgtccgagg gcgccacccc ccaggacctg 540
 aacaccatgc tgaacaccgt gggcgggccac caggccgcca tgcagatgct gaaggacacc 600
 atcaacgagg aggcgcgcga gtgggaccgc ctgcaccccg tgcacgcccg ccccatcccc 660
 cccggccaga tgcgcgagcc ccgcggctcc gacatcgccg gcaccacctc caccctgcag 720
 gagcagatcc agtggatgac ctccaacccc cccgtgcccg tgggcgagat ctacaagcgc 780
 tggatcatcc tgggcctgaa caagatcgtg cgcagtact ccccgctgtc catcctggac 840
 atccgccagg gcccgaagga gcccttcgcg gactacgtgg accgcttctt caagaccctg 900
 cgcgcccagc aggccaccca ggaggtgaag ggctggatga ccgacacctt gctggtgcag 960
 aacgccaacc ccgactgcaa gaccatcctg aaggccctgg gccccggcgc caccctggag 1020

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gagatgatga ccgcctgcc a gggcgtgggc ggccccggcc acaaggcccg cgtgctggcc 1080
gaggccatgt cccaggtgac caacaccacc gtgatgatgc agaagtccaa cttcaagggc 1140
cagcgccgca tcgtgaagtg cttcaactgc ggcaaggagg gccacatcgc caagaactgc 1200
cgcgcccccc gcaagaaggg ctgctggaag tgcgggccgc agggccacca gatgaaggac 1260
tgcaccgagc gccaggccaa cttcctgggc aagatctggc cctccaacaa gggccgcccc 1320
ggcaacttcc tgcagaaccg ccccgagccc accgcccccc ccgcccagtc cttcggcttc 1380
ggcgaggaga tcacccctc cccaagcag gagcagaagg acgagggcct gtaccccccc 1440
ctggcctccc tgaagtcct gttcggcaac gaccctaa 1479

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<210> 162
 <211> 496
 <212> PRT
 <213> Human immunodeficiency virus

```

<400> 162
Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Lys Leu Asp Ala Trp
  1              5              10              15

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Met Lys
      20              25              30

His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
      35              40              45

Asp Leu Leu Glu Thr Ala Glu Gly Cys Gln Gln Ile Met Gly Gln Leu
      50              55              60

Gln Pro Ala Leu Gln Thr Gly Thr Glu Glu Ile Arg Ser Leu Phe Asn
      65              70              75              80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Lys Ile Glu Val Lys Asp
      85              90              95

Thr Lys Glu Ala Leu Glu Glu Val Glu Lys Ala Gln Lys Lys Ser Gln
      100             105             110

Lys Lys Gln Gln Ala Ala Met Asp Glu Gly Asn Asn Ser Gln Ala Ser
      115             120             125

Gln Asn Tyr Pro Ile Val Gln Asn Ala Gln Gly Gln Met Val His Gln
      130             135             140

Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu Glu
      145             150             155             160

Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu
      165             170             175

Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly
      180             185             190

His Gln Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu Ala
      195             200             205

Ala Glu Trp Asp Arg Met His Pro Gln Gln Ala Gly Pro Ile Pro Pro
      210             215             220

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Gly	Gln	Ile	Arg	Glu	Pro	Arg	Gly	Ser	Asp	Ile	Ala	Gly	Thr	Thr	Ser	225	230	235	240
Thr	Leu	Gln	Glu	Gln	Ile	Arg	Trp	Met	Thr	Ser	Asn	Pro	Pro	Ile	Pro	245	250	255	
Val	Gly	Glu	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	Ile	260	265	270	
Val	Arg	Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly	Pro	275	280	285	
Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Thr	Leu	Arg	290	295	300	
Ala	Glu	Gln	Ala	Thr	Gln	Glu	Val	Lys	Gly	Trp	Met	Thr	Asp	Thr	Leu	305	310	315	320
Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Arg	Ala	Leu	325	330	335	
Gly	Pro	Gly	Ala	Thr	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly	Val	340	345	350	
Gly	Gly	Pro	Ser	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser	Gln	355	360	365	
Ala	Ser	Gly	Ala	Thr	Ile	Met	Met	Gln	Lys	Ser	Asn	Phe	Lys	Gly	Pro	370	375	380	
Arg	Arg	Asn	Ile	Lys	Cys	Phe	Asn	Cys	Gly	Lys	Glu	Gly	His	Leu	Ala	385	390	395	400
Arg	Asn	Cys	Arg	Ala	Pro	Arg	Lys	Lys	Gly	Cys	Trp	Lys	Cys	Gly	Lys	405	410	415	
Glu	Gly	His	Gln	Met	Lys	Asp	Cys	Thr	Glu	Ser	Lys	Ala	Asn	Phe	Leu	420	425	430	
Gly	Lys	Ile	Trp	Pro	Ser	Asn	Lys	Gly	Arg	Pro	Gly	Asn	Phe	Leu	Gln	435	440	445	
Asn	Arg	Pro	Glu	Pro	Thr	Ala	Pro	Pro	Ala	Glu	Ser	Phe	Gly	Phe	Gly	450	455	460	
Glu	Glu	Ile	Ala	Pro	Ser	Pro	Lys	Gln	Glu	Pro	Lys	Glu	Lys	Glu	Ile	465	470	475	480
Tyr	Pro	Leu	Ala	Ser	Leu	Lys	Ser	Leu	Phe	Gly	Ser	Asp	Pro	Ser	Gln	485	490	495	

<210> 163

<211> 1494

<212> DNA

<213> Human immunodeficiency virus

<400> 163

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atggggcgccc gcgcctccgt gctgtccggc ggcaagctgg acgcctggga gaagatccgc 60
ctgcgccccg gcggcaagaa gaagtaccgc atgaagcacc tgggtgtgggc ctcccgcgag 120
ctggagcgct tcgccctgaa ccccgacctg ctggagaccg ccgagggctg ccagcagatc 180
atggggccagc tgcagcccg cctgcagacc ggcaccgagg agatccgctc cctgttcaac 240
accgtggcca ccctgtactg cgtgcaccag aagatcgagg tgaaggacac caaggaggcc 300
ctggaggagg tggagaaggc ccagaagaag tcccagaaga agcagcaggc cgccatggac 360
gagggcaaca actcccaggc ctcccagaac taccatcg tgcagaacgc ccagggccag 420
atggtgcacc aggccatctc ccccgcacc ctgaacgcct ggggtgaagg ggtggaggag 480
aaggccttct ccccgagggt gatcccatg ttctccgccc tgtccgagg cgccaccccc 540
caggacctga acaccatgct gaacaccgtg ggcgccacc aggcgccat gcagatgctg 600
aaggacacca tcaacgagga ggccgccgag tgggaccgca tgcaccccca gcaggccggc 660
cccatcccc ccggccagat ccgcgagccc cgcggtctcg acatcgccgg caccacctcc 720
accctgcagg agcagatccg ctggatgacc tccaaccccc ccatccccgt gggcgagatc 780
tacaagcgct ggatcatcct gggcctgaac aagatcgctg gcatgtactc ccccggtgcc 840
atcctggaca tccgccaggg cccaaggag cccttccgcg actacgtgga ccgcttcttc 900
aagaccctgc gcgccgagca ggccaccag gaggtgaagg gctggatgac cgacaccctg 960
ctggtgcaga acgccaaccc cgactgcaag accatcctgc gcgcctggg ccccggcgcc 1020
accctggagg agatgatgac cgctgccag ggcgtgggcg gcccctcca caaggccgc 1080
gtgctggccg aggccatgtc ccaggcctcc ggcgccacca tcatgatgca gaagtccaac 1140
ttcaagggcc cccgccgcaa catcaagtgc ttcaactgcg gcaaggagg ccacctggcc 1200
cgcaactgcc gcgcccccg caagaagggc tgctggaagt gcggcaagga gggccaccag 1260
atgaaggact gcaccgagtc caaggccaac ttctgggca agatctggcc ctccaacaag 1320
ggcgccccg gcaacttct gcagaaccgc cccgagccca ccgcccccc cgccgagtcc 1380
ttcggttcg gcgaggagat cgccccctcc cccaagcagg agcccaagga gaaggagatc 1440
taccctctg cctccctgaa gtcctgttc ggctccgacc cctaattcca gtaa 1494
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<210> 164

<211> 206

<212> PRT

<213> Human immunodeficiency virus

<400> 164

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Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Ala Val
  1                5                10                15

Arg Glu Arg Ile Arg Arg Thr Pro Pro Ala Ala Glu Gly Val Gly Ala
      20                25                30

Val Ser Gln Asp Leu Asp Lys His Gly Ala Ile Thr Ser Ser Asn Thr
      35                40                45

Ala Ala Thr Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu
      50                55                60

Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr
      65                70                75                80

Tyr Lys Gly Ala Phe Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly
      85                90                95

Leu Asp Gly Leu Ile Tyr Ser Lys Lys Arg Gln Glu Ile Leu Asp Leu
      100                105                110

Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr
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115	120	125
Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe Lys		
130	135	140
Leu Val Pro Val Asp Pro Glu Glu Val Glu Glu Ala Asn Glu Gly Glu		
145	150	155
Asn Asn Cys Leu Leu His Pro Met Cys Gln His Gly Met Glu Asp Glu		
165	170	175
Asp Arg Glu Val Leu Met Trp Lys Phe Asp Ser Arg Leu Ala Leu Arg		
180	185	190
His Ile Ala Arg Glu Leu His Pro Glu Phe Tyr Lys Asp Cys		
195	200	205

<210> 165
 <211> 621
 <212> DNA
 <213> Human immunodeficiency virus

<400> 165
 atgggcggca agtgggtccaa gtcctccatc gtgggctggc ccgccgtgcg cgagcgcac 60
 cgccgcaccc ccccgccgc cgagggcgtg ggcgccgtgt cccaggacct ggacaagcac 120
 ggcgccatca cctcctccaa caccgccgcc accaacgccg actgcgcctg gctggaggcc 180
 caggaggagg aggaggtggg cttccccgtg cgccccagg tgccctgcg ccccatgacc 240
 tacaagggcg ccttcgacct gtccacttc ctgaaggaga agggcgccct ggacggcctg 300
 atctactcca agaagcgcca ggagatcctg gacctgtggg tgtaccacac ccagggtac 360
 ttccccgact ggcagaacta ccccccggc cccggcatcc gctacccct gaccttcggc 420
 tgggtgcttca agctgggtgcc cgtggacccc gaggaggtgg aggaggccaa cgagggcgag 480
 aacaactgcc tgctgcaccc catgtgccag caccggcatgg aggacgagga ccgcgaggtg 540
 ctgatgtgga agttcgactc ccgcctggcc ctgcgccaca tcgccgcga gctgcacccc 600
 gagttctaca aggactgcta a 621

<210> 166
 <211> 206
 <212> PRT
 <213> Human immunodeficiency virus

<400> 166
 Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Ala Val
 1 5 10 15
 Arg Glu Arg Met Arg Arg Thr Ala Pro Ala Ala Glu Gly Val Gly Ala
 20 25 30
 Val Ser Gln Asp Leu Asp Lys His Gly Ala Ile Thr Ser Ser Asn Thr
 35 40 45
 Ala Ala Thr Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu
 50 55 60
 Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr
 65 70 75 80

Val Ser Gln Asp Leu Asp Lys Tyr Gly Ala Val Thr Ile Asn Asn Thr
 35 40 45
 Ala Ala Thr Gln Ala Ser Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu
 50 55 60
 Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
 65 70 75 80
 Thr Phe Lys Gly Ala Phe Asp Leu Ser Phe Phe Leu Lys Glu Lys Gly
 85 90 95
 Gly Leu Asp Gly Leu Ile Tyr Ser Gln Lys Arg Gln Glu Ile Leu Asp
 100 105 110
 Leu Trp Val Tyr Asn Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr
 115 120 125
 Thr Pro Gly Pro Gly Thr Arg Phe Pro Leu Thr Phe Gly Trp Cys Phe
 130 135 140
 Lys Leu Val Pro Val Asp Pro Asp Glu Val Glu Glu Ala Thr Glu Gly
 145 150 155 160
 Glu Asn Asn Cys Leu Leu His Pro Ile Cys Gln His Gly Met Asp Asp
 165 170 175
 Glu Glu Lys Glu Val Leu Met Trp Lys Phe Asp Ser Arg Leu Ala Arg
 180 185 190
 Arg His Ile Ala Leu Glu Met His Pro Glu Phe Tyr Lys Asp Cys
 195 200 205

<210> 169
 <211> 624
 <212> DNA
 <213> Human immunodeficiency virus

<400> 169
 atgggaggca agtggtccaa gtcctccatc gtgggctggc cgcacatccg cgagcgcac 60
 cgccgcaccc ccccgccgc caagggcgtg ggcgccgtgt cccaggacct ggacaagtac 120
 ggcgccgtga ccatcaacaa caccgccgcc acccaggcct cctgcgcctg gctggaggcc 180
 caggaggagg aggaggaggt gggcttcccc gtgcgcccc aggtgcccc gcgccccatg 240
 acctcaagg gcgccttcga cctgtccttc ttcctgaagg agaagggcgg cctggacggc 300
 ctgatctact ccagaagcg ccaggagatc ctggacctgt ggggtgtacaa caccagggc 360
 tacttccccg actggcagaa ctacaccccc ggccccggca cccgcttccc cctgaccttc 420
 ggctggtgct tcaagctggt gcccgctggac cccgacgagg tggaggaggc caccgagggc 480
 gagaacaact gcctgctgca ccccatctgc cagcacggca tggacgacga ggagaaggag 540
 gtgctgatgt ggaagttcga ctccgcctg gcccgccgcc acatcgccct ggagatgcac 600
 cccgagttct acaaggactg ctaa 624

<210> 170
 <211> 204
 <212> PRT
 <213> Human immunodeficiency virus

<400> 170

Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Glu Val
1 5 10 15

Arg Glu Arg Met Arg Arg Thr Pro Pro Ala Ala Thr Gly Val Gly Ala
20 25 30

Val Ser Gln Asp Leu Asp Lys His Gly Ala Val Thr Ser Ser Asn Ile
35 40 45

Asn His Pro Ser Cys Val Trp Leu Glu Ala Gln Glu Glu Glu Val
50 55 60

Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr Tyr Lys
65 70 75 80

Gly Ala Leu Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly Leu Asp
85 90 95

Gly Leu Ile Tyr Ser Arg Lys Arg Gln Glu Ile Leu Asp Leu Trp Val
100 105 110

Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr Pro Gly
115 120 125

Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe Lys Leu Val
130 135 140

Pro Val Asp Pro Asp Glu Val Glu Lys Ala Thr Glu Gly Glu Asn Asn
145 150 155 160

Ser Leu Leu His Pro Ile Cys Gln His Gly Met Asp Asp Glu Glu Arg
165 170 175

Glu Val Leu Lys Trp Lys Phe Asp Ser Arg Leu Ala Leu Lys His Arg
180 185 190

Ala Gln Glu Leu His Pro Glu Phe Tyr Lys Asp Cys
195 200

<210> 171

<211> 615

<212> DNA

<213> Human immunodeficiency virus

<400> 171

atgggaggca agtgggtccaa gtctctccatc gtggggtggc ccgaggtgcg cgagcgcacatg 60
cgccgcaccc cccccgccgc caccggcggtg ggcgcggtgt cccaggacct ggacaagcac 120
ggcgccgtga cctctctccaa catcaaccac cctctctgcg tgtgggtgga ggcccaggag 180
gaggaggagg tgggcttccc cgtgcgcccc caggtgcccc tgcgccccat gacctacaag 240
ggcgccctgg acctgtccca cttctctgaag gagaagggcg gcctggacgg cctgatctac 300
tcccgcgaagc gccaggagat cctggacctg tgggtgtacc acaccagggg ctacttcccc 360
gactggcaga actacacccc cgccccggc atccgctacc ccctgacctt cggctggtgc 420
ttcaagctgg tgcccgtgga ccccgacgag gtggagaagg ccaccgaggg cgagaacaac 480
tcctgtctgc acccatctg ccagcacggc atggacgacg aggagcgca ggtgctgaag 540

tggaagttcg actccgcct ggccctgaag caccgcgcc aggagctgca ccccgagttc 600
tacaaggact gctaa 615

<210> 172
<211> 206
<212> PRT
<213> Human immunodeficiency virus

<400> 172
Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Glu Val
1 5 10 15
Arg Glu Arg Met Arg Arg Thr Pro Pro Ala Ala Lys Gly Val Gly Ala
20 25 30
Val Ser Gln Asp Leu Asp Lys His Gly Ala Val Thr Ser Ser Asn Thr
35 40 45
Ala Ala Asn Asn Pro Gly Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu
50 55 60
Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr
65 70 75 80
Tyr Lys Gly Ala Phe Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly
85 90 95
Leu Asp Gly Leu Ile Tyr Ser Lys Lys Arg Gln Glu Ile Leu Asp Leu
100 105 110
Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr
115 120 125
Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe Lys
130 135 140
Leu Val Pro Val Asp Pro Ala Glu Val Glu Glu Ala Thr Glu Gly Glu
145 150 155 160
Asn Asn Ser Leu Leu His Pro Ile Cys Gln His Gly Met Asp Asp Glu
165 170 175
Glu Arg Glu Val Leu Met Trp Lys Phe Asp Ser Arg Leu Ala Leu Lys
180 185 190
His Arg Ala Arg Glu Leu His Pro Glu Phe Tyr Lys Asp Cys
195 200 205

<210> 173
<211> 621
<212> DNA
<213> Human immunodeficiency virus

<400> 173
atgggcggca agtgggtccaa gtcctccatc gtgggctggc ccgaggtgcg cgagcgcacg 60

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cgccgcaccc cccccgccgc caagggcggtg ggcgccgtgt cccaggacct ggacaagcac 120
ggcgccgtga cctcctccaa caccgccgcc aacaaccccg gctgcgcctg gctggaggcc 180
caggaggagg aggagggtggg cttccccgtg cgcccccagg tgcccctgcg ccccatgacc 240
tacaagggcg ccttcgacct gtcccacttc ctgaaggaga agggcggcct ggacggcctg 300
atctactcca agaagcgcca ggagatcctg gacctgtggg tgtaccacac ccagggctac 360
ttccccgact ggacagaacta cccccccggc cccggcatcc gctacccctt gaccttcggc 420
tggtgcttca agctgggtgcc cgtggacccc gccgaggtgg aggaggccac cgagggcgag 480
aacaactccc tgctgcaccc catctgccag cacggcatgg acgacgagga gcgcgaggtg 540
ctgatgtgga agttcgactc ccgcctggcc ctgaagcacc gcgcccgcga gctgcacccc 600
gagttctaca aggactgcta a                                     621

```

<210> 174

<211> 207

<212> PRT

<213> Human immunodeficiency virus

<400> 174

```

Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Ala Ile
  1                      5                      10                      15

Arg Glu Arg Met Arg Lys Arg Thr Pro Pro Ala Ala Glu Gly Val Gly
      20                      25                      30

Ala Val Ser Gln Asp Leu Ala Thr Arg Gly Ala Val Thr Ser Ser Asn
      35                      40                      45

Thr Ala Ala Thr Asn Pro Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu
      50                      55                      60

Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
      65                      70                      75                      80

Thr Phe Lys Gly Ala Phe Asp Leu Ser His Phe Leu Lys Glu Lys Gly
      85                      90                      95

Gly Leu Asp Gly Leu Ile Tyr Ser Gln Lys Arg Gln Asp Ile Leu Asp
      100                      105                      110

Leu Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr
      115                      120                      125

Thr Pro Gly Pro Gly Thr Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe
      130                      135                      140

Lys Leu Val Pro Val Asp Pro Ser Glu Val Glu Glu Ala Thr Glu Gly
      145                      150                      155                      160

Glu Asn Asn Ser Leu Leu His Pro Ile Cys Gln His Gly Ile Glu Asp
      165                      170                      175

Pro Glu Arg Glu Val Leu Arg Trp Lys Phe Asp Ser Arg Leu Ala Leu
      180                      185                      190

Arg His Arg Ala Arg Glu Leu His Pro Glu Phe Tyr Lys Asp Cys
      195                      200                      205

```

<210> 175
<211> 624
<212> DNA
<213> Human immunodeficiency virus

<400> 175
atgggcgga agtggtccaa gtcctccatc gtgggctggc ccgccatccg cgagcgcatg 60
cgcaagcgca cccccccgc cgccgagggc gtgggcgccg tgtcccagga cctggccacc 120
cgcggcgccc tgacctctc caacaccgcc gccaccaacc ccgactgcgc ctggctggag 180
gcccaggagg aggaggaggt gggttcccc gtgcgcccc aggtgcccct gcgccccatg 240
accttcaagg gcgccttcga cctgtccac ttctgaagg agaaggcg cctggacggc 300
ctgatctact cccagaagcg ccaggacatc ctggacctgt ggggtgtacca caccagggc 360
tacttccccg actggcagaa ctacaccccc ggccccggca cccgctaccc cctgaccttc 420
ggctgggtgct tcaagctggt gccctgggac cctccgagg tggaggaggc caccgagggc 480
gagaacaact ccctgctgca ccccatctgc cagcacggca tcgaggaccc cgagcgcgag 540
gtgctgcgct ggaagttcga ctcccgctg gcctgcgcc accgcgcccg cgagctgcac 600
cccagattct acaaggactg ctaa 624

<210> 176
<211> 206
<212> PRT
<213> Human immunodeficiency virus

<400> 176
Met Gly Gly Lys Trp Ser Lys Arg Ser Val Val Gly Trp Pro Thr Val
1 5 10 15
Arg Glu Arg Met Arg Arg Ala Glu Pro Ala Ala Asp Gly Val Gly Ala
20 25 30
Val Ser Arg Asp Leu Glu Lys His Gly Ala Ile Thr Ser Ser Asn Thr
35 40 45
Ala Ala Asn Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu
50 55 60
Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr
65 70 75 80
Tyr Lys Gly Ala Leu Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly
85 90 95
Leu Glu Gly Leu Ile Tyr Ser Gln Lys Arg Gln Asp Ile Leu Asp Leu
100 105 110
Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr
115 120 125
Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe Lys
130 135 140
Leu Val Pro Val Glu Pro Glu Lys Val Glu Glu Ala Asn Glu Gly Glu
145 150 155 160
Asn Asn Ser Leu Leu His Pro Met Ser Leu His Gly Met Asp Asp Pro

165

170

175

Glu Arg Glu Val Leu Val Trp Lys Phe Asp Ser Arg Leu Ala Phe His
 180 185 190

His Met Ala Arg Glu Leu His Pro Glu Tyr Tyr Lys Asp Cys
 195 200 205

<210> 177

<211> 621

<212> DNA

<213> Human immunodeficiency virus

<400> 177

atgggaggca agtgggtccaa gcgctccgtg gtgggctggc ccaccgtgcg cgagcgcgatg 60
 cgccgcgccg agcccgcgc cgacggcggtg ggcgccgtgt cccgcgacct ggagaagcac 120
 ggcgccatca cctcctccaa caccgccgcc aacaacgccg actgcgcctg gctggaggcc 180
 caggaggagg aggagggtggg cttccccgtg cgccccccagg tgccccctgcg ccccatgacc 240
 tacaagggcg ccctggacct gtcccacttc ctgaaggaga agggcggcct ggagggcctg 300
 atctactccc agaagcgcca ggacatcctg gacctgtggg tgtaccacac ccagggctac 360
 ttccccgact ggcagaacta ccccccggc cccggcatcc gctacccccct gaccttcggc 420
 tgggtgcttca agctgggtgcc cgtggagccc gagaagggtg aggaggccaa cgagggcgag 480
 aacaactccc tgctgcaccc catgtccctg cacggcatgg acgaccccgga gcgcgagggtg 540
 ctgggtgtgga agttcgactc ccgcttggtc ttccaccaca tggcccgcga gctgcacccc 600
 gagtactaca aggactgcta a 621

<210> 178

<211> 206

<212> PRT

<213> Human immunodeficiency virus

<400> 178

Met Gly Gly Lys Trp Ser Lys Ser Ser Met Gly Gly Trp Pro Ala Val
 1 5 10 15

Arg Glu Arg Met Lys Arg Ala Glu Pro Ala Ala Asp Gly Val Gly Ala
 20 25 30

Val Ser Arg Asp Leu Glu Lys His Gly Ala Ile Thr Ser Ser Asn Thr
 35 40 45

Ala Ala Thr Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu
 50 55 60

Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr
 65 70 75 80

Tyr Lys Ala Ala Leu Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly
 85 90 95

Leu Glu Gly Leu Ile Tyr Ser Gln Lys Arg Gln Asp Ile Leu Asp Leu
 100 105 110

Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr
 115 120 125

Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe Lys
 130 135 140

Leu Val Pro Val Glu Pro Glu Lys Val Glu Glu Ala Thr Glu Gly Glu
 145 150 155 160

Asn Asn Ser Leu Leu His Pro Met Cys Gln His Gly Met Asp Asp Pro
 165 170 175

Glu Lys Glu Val Leu Val Trp Lys Phe Asp Ser Arg Leu Ala Phe His
 180 185 190

His Met Ala Arg Glu Leu His Pro Glu Tyr Tyr Lys Asp Cys
 195 200 205

<210> 179

<211> 621

<212> DNA

<213> Human immunodeficiency virus

<400> 179

atgggcgcca agtgggtccaa gtcctccatg ggcggctggc ccgccgtgcg cgagcgcgatg 60
 aagcgcgccg agcccgcgcg cgacggcgtg ggcgccgtgt cccgcgacct ggagaagcac 120
 ggcgccatca cctcctccaa caccgcccgc accaacgccg actgcgcctg gctggaggcc 180
 caggaggagg aggaggtggg cttccccgtg cgcgccagg tgcccctgcg ccccatgacc 240
 tacaaggccg ccctggacct gtcccaactc ctgaaggaga agggcggcct ggagggcctg 300
 atctactccc agaagcgcca ggacatcctg gacctgtggg tgtaccacac ccagggctac 360
 ttccccgact ggcagaacta ccccccggc cccggcatcc gctacccctt gaccttcggc 420
 tgggtgcttca agctgggtgcc cgtggagccc gagaagggtg aggaggccac cgagggcgag 480
 aacaactccc tgctgcaccc catgtgccag caccggcatg acgaccccca gaaggaggtg 540
 ctgggtgtgga agttcgactc ccgcctggcc ttccaccaca tggcccgcga gctgcacccc 600
 gagtactaca aggactgcta a 621

<210> 180

<211> 206

<212> PRT

<213> Human immunodeficiency virus

<400> 180

Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Lys Val
 1 5 10 15

Arg Glu Arg Ile Arg Gln Thr Pro Pro Ala Ala Thr Gly Val Gly Ala
 20 25 30

Ala Ser Gln Asp Leu Asp Arg His Gly Ala Ile Thr Ser Ser Asn Thr
 35 40 45

Ala Ala Thr Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu
 50 55 60

Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr
 65 70 75 80

Tyr Lys Ala Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly
 85 90 95
 Leu Glu Gly Leu Ile Tyr Ser Lys Lys Arg Gln Glu Ile Leu Asp Leu
 100 105 110
 Trp Val Tyr His Thr Gln Gly Phe Phe Pro Asp Trp Gln Asn Tyr Thr
 115 120 125
 Pro Gly Pro Gly Thr Arg Phe Pro Leu Thr Phe Gly Trp Cys Phe Lys
 130 135 140
 Leu Val Pro Met Asp Pro Ala Glu Val Glu Glu Ala Asn Glu Gly Glu
 145 150 155 160
 Asn Asn Ser Leu Leu His Pro Ile Cys Gln His Gly Met Glu Asp Glu
 165 170 175
 Asp Arg Glu Val Leu Val Trp Arg Phe Asp Ser Ser Leu Ala Phe Lys
 180 185 190
 His Arg Ala Arg Glu Leu His Pro Glu Phe Tyr Lys Asp Cys
 195 200 205

<210> 181
 <211> 621
 <212> DNA
 <213> Human immunodeficiency virus

<400> 181
 atgggaggca agtggtccaa gtccctccatc gtgggctggc ccaaggtgcg cgagcgcac 60
 cgccagaccc cccccgccgc caccggcggtg ggcgcgcgct ccagggacct ggaccgccac 120
 ggcgccatca cctcctccaa caccggcgcc accaacgccg actgcgcctg gctggaggcc 180
 caggaggagg aggaggtggg cttccccgtg cgccccaggg tgccctgcg ccccatgacc 240
 tacaaggccg ccgtggacct gtcccacttc ctgaaggaga agggcggcct ggagggcctg 300
 atctactcca agaagcgcca ggagatcctg gacctgtggg tgtaccacac ccagggcttc 360
 ttccccgact ggcagaacta ccccccggc cccggcaccc gcttccccct gaccttcggc 420
 tgggtgcttca agctgggtgcc catggacccc gccgaggtgg aggaggccaa cgagggcgag 480
 aacaactccc tgctgcaccc catctgccag caccgcatgg aggacgagga ccgcgaggtg 540
 ctgggtgtggc gcttcgactc ctccctggcc ttcaagcacc gcgcccgcga gctgcacccc 600
 gagttctaca aggactgcta a 621

<210> 182
 <211> 207
 <212> PRT
 <213> Human immunodeficiency virus

<400> 182
 Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Ala Val
 1 5 10 15
 Arg Glu Arg Ile Arg Arg Thr Glu Pro Ala Ala Glu Gly Val Gly Ala
 20 25 30
 Ala Ser Gln Asp Leu Asp Lys His Gly Ala Leu Thr Ser Ser Asn Thr

35					40					45				
Ala	Thr	Asn	Asn	Ala	Asp	Cys	Ala	Trp	Leu	Glu	Ala	Gln	Glu	Glu
50						55				60				
Glu	Glu	Val	Gly	Phe	Pro	Val	Arg	Pro	Gln	Val	Pro	Leu	Arg	Pro
65					70					75				80
Thr	Tyr	Lys	Ala	Ala	Phe	Asp	Leu	Ser	Phe	Phe	Leu	Lys	Glu	Lys
				85					90					95
Gly	Leu	Glu	Gly	Leu	Ile	Tyr	Ser	Lys	Lys	Arg	Gln	Glu	Ile	Leu
			100					105					110	Asp
Leu	Trp	Val	Tyr	His	Thr	Gln	Gly	Tyr	Phe	Pro	Asp	Trp	Gln	Asn
			115				120					125		Tyr
Thr	Pro	Gly	Pro	Gly	Val	Arg	Tyr	Pro	Leu	Thr	Phe	Gly	Trp	Cys
			130				135					140		Phe
Lys	Leu	Val	Pro	Val	Asp	Pro	Arg	Glu	Val	Glu	Glu	Ala	Asn	Glu
145					150					155				160
Glu	Asn	Asn	Cys	Leu	Leu	His	Pro	Met	Ser	Gln	His	Gly	Met	Glu
			165						170				175	Asp
Glu	Asp	Arg	Glu	Val	Leu	Lys	Trp	Lys	Phe	Asp	Ser	His	Leu	Ala
			180					185					190	Arg
Arg	His	Met	Ala	Arg	Glu	Leu	His	Pro	Glu	Tyr	Tyr	Lys	Asp	Cys
		195					200					205		

<210> 183
 <211> 624
 <212> DNA
 <213> Human immunodeficiency virus

<400> 183
 atgggaggca agtgggtccaa gtcctccatc gtgggctggc ccgccgtgcg cgagcgcac 60
 cgccgcaccg agcccgccgc cgagggcggt ggccgcgcct cccaggacct ggacaagcac 120
 ggcgcctga cctcctccaa caccgccacc aacaacgccg actgcgcctg gctggaggcc 180
 caggaggagg aggaggaggt gggcttcccc gtgcgcccc aggtgcccc gcgccccatg 240
 acctacaagg ccgccttcga cctgtccttc ttctgaagg agaagggcgg cctggagggc 300
 ctgatctact ccaagaagcg ccaggagatc ctggacctgt ggggtgtacca caccagggc 360
 tacttccccg actggcagaa ctacaccccc ggccccggcg tgcgctaccc cctgaccttc 420
 ggctggtgct tcaagctggt gcccggtggc ccccgcgagg tggaggaggc caacgagggc 480
 gagaacaact gcctgctgca ccccatgtcc cagcacggca tggaggacga ggaccgcgag 540
 gtgctgaagt ggaagttcga ctccacctg gcccgccgcc acatggcccc cgagctgcac 600
 cccgagtact acaaggactg ctaa 624

<210> 184
 <211> 207
 <212> PRT
 <213> Human immunodeficiency virus

<400> 184

Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Ala Val
1 5 10 15

Arg Glu Arg Met Arg Arg Thr Glu Pro Ala Ala Glu Gly Val Gly Ala
20 25 30

Ala Ser Gln Asp Leu Asp Lys His Gly Ala Leu Thr Ser Ser Asn Thr
35 40 45

Ala Ala Asn Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu
50 55 60

Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
65 70 75 80

Thr Tyr Lys Ala Ala Phe Asp Leu Ser Phe Phe Leu Lys Glu Lys Gly
85 90 95

Gly Leu Asp Gly Leu Ile Tyr Ser Lys Lys Arg Gln Glu Ile Leu Asp
100 105 110

Leu Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr
115 120 125

Thr Pro Gly Pro Gly Val Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe
130 135 140

Lys Leu Val Pro Val Asp Pro Arg Glu Val Glu Glu Ala Asn Glu Gly
145 150 155 160

Glu Asn Asn Cys Leu Leu His Pro Met Ser Gln His Gly Met Glu Asp
165 170 175

Glu Asp Arg Glu Val Leu Lys Trp Lys Phe Asp Ser His Leu Ala Arg
180 185 190

Arg His Met Ala Arg Glu Leu His Pro Glu Tyr Tyr Lys Asp Cys
195 200 205

<210> 185

<211> 624

<212> DNA

<213> Human immunodeficiency virus

<400> 185

atgggcgggca agtgggtccaa gtcctccatc gtgggctggc cgcgcgtgcg cgagcgcgatg 60
cgccgcaccg agcccgcgcg cgagggcggtg ggcgcgcgct cccaggacct ggacaagcac 120
ggcgccctga cctcctccaa caccgcccgc aacaacgccg actgcgcctg gctggaggcc 180
caggaggagg aggaggaggt gggcttcccc gtgcgcccc aggtgcccct gcgccccatg 240
acctacaagg ccgccttcga cctgtccttc ttcctgaagg agaagggcg cctggacggc 300
ctgatctact ccaagaagcg ccaggagatc ctggacctgt ggggtgtacca caccaggggc 360
tacttccccg actggcagaa ctacaccccc ggccccggcg tgcgctacct cctgaccttc 420
ggctgggtgct tcaagctggt gcccgtggac cccgcgcagg tggaggaggc caacgagggc 480
gagaacaact gcctgctgca ccccatgtcc cagcacggca tggaggacga ggaccgcgag 540
gtgctgaagt ggaagttcga ctcccacctg gccgcgcgcg acatggcccc cgagctgcac 600

<210> 186
 <211> 207
 <212> PRT
 <213> Human immunodeficiency virus

<400> 186
 Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Ala Ile
 1 5 10 15
 Arg Glu Arg Ile Arg Arg Thr Glu Pro Ala Ala Asp Gly Val Gly Ala
 20 25 30
 Val Ser Arg Asp Leu Glu Lys His Gly Ala Ile Thr Ser Ser Asn Thr
 35 40 45
 Ala Ala Thr Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Asp
 50 55 60
 Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
 65 70 75 80
 Thr Tyr Lys Ala Ala Leu Asp Leu Ser His Phe Leu Lys Glu Lys Gly
 85 90 95
 Gly Leu Glu Gly Leu Val Trp Ser Gln Lys Arg Gln Glu Ile Leu Asp
 100 105 110
 Leu Trp Val Tyr Asn Thr Gln Gly Phe Phe Pro Asp Trp Gln Asn Tyr
 115 120 125
 Thr Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe
 130 135 140
 Glu Leu Val Pro Val Asp Pro Glu Glu Val Glu Glu Ala Thr Glu Gly
 145 150 155 160
 Glu Asn Asn Cys Leu Leu His Pro Met Cys Gln His Gly Met Glu Asp
 165 170 175
 Pro Glu Arg Glu Val Leu Met Trp Arg Phe Asn Ser Arg Leu Ala Phe
 180 185 190
 Glu His Lys Ala Arg Val Leu His Pro Glu Phe Tyr Lys Asp Cys
 195 200 205

<210> 187
 <211> 624
 <212> DNA
 <213> Human immunodeficiency virus

<400> 187
 atgggaggca agtggtccaa gtcctccatc gtgggctggc ccgccatccg cgagcgcac 60
 cgccgcaccg agcccgccgc cgacggcgtg ggcgccgtgt cccgcgacct ggagaagcac 120

```

ggcgccatca cctcctccaa caccgccgcc accaacgccg actgcgcctg gctggaggcc 180
caggaggagg acgaggaggt gggcttcccc gtgcgcccc aggtgcccct gcgccccatg 240
acctacaagg ccgcccctgga cctgtcccac ttcctgaagg agaagggcgg cctggagggc 300
ctgggtgtgtt cccagaagcg ccaggagatc ctggacctgt ggggtgtacaa caccagggc 360
ttcttccccg actggcagaa ctacaccccc ggccccggca tccgctaccc cctgaccttc 420
ggctgggtgct tcgagctggt gcccgtggac cccgaggagg tggaggaggc caccgagggc 480
gagaacaact gcctgctgca ccccatgtgc cagcacggca tggaggacct cgagcgcgag 540
gtgctgatgt ggcgcttcaa ctcccgcctg gccttcgagc acaaggcccc cgtgctgcac 600
cccgagttct acaaggactg ctaa                                     624

```

<210> 188

<211> 205

<212> PRT

<213> Human immunodeficiency virus

<400> 188

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Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Ala Val
  1              5              10              15

Arg Glu Arg Met Arg Pro Thr Pro Pro Ala Ala Glu Gly Val Gly Ala
      20              25              30

Val Ser Gln Asp Leu Glu Arg Arg Gly Ala Ile Thr Ser Ser Asn Thr
      35              40              45

Gly Ala Thr Asn Pro Asp Leu Ala Trp Leu Glu Ala Gln Glu Glu Glu
      50              55              60

Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr
      65              70              75              80

Tyr Lys Gly Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly
      85              90              95

Leu Glu Gly Leu Ile Tyr Ser Lys Lys Arg Gln Glu Ile Leu Asp Leu
      100             105             110

Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr
      115             120             125

Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe Lys
      130             135             140

Leu Val Pro Val Asp Pro Glu Glu Val Glu Lys Ala Asn Glu Gly Glu
      145             150             155             160

Asn Asn Cys Leu Leu His Pro Met Ser Gln His Gly Met Glu Asp Glu
      165             170             175

Asp Arg Glu Val Leu Ile Trp Lys Phe Asp Ser Arg Leu Ala Leu Arg
      180             185             190

His Ile Ala Arg Glu Arg His Pro Glu Phe Tyr Gln Asp
      195             200             205

```

<210> 189
 <211> 618
 <212> DNA
 <213> Human immunodeficiency virus

<400> 189
 atgggaggca agtgggtccaa gtcctccatc gtggggtggc ccgccgtgcg cgagcgcacg 60
 cgccccaccc cccccgccgc cgagggcggtg ggcgccgtgt cccaggacct ggagcgccgc 120
 ggcgccatca cctcctccaa caccggcgcc accaaccgac acctggcctg gctggaggcc 180
 caggaggagg aggaggtggg cttccccgtg cgcgccagg tgcccctgcg ccccatgacc 240
 tacaagggcg ccgtggacct gtcccacttc ctgaaggaga agggcgccct ggagggcctg 300
 atctactcca agaagcgcca ggagatcctg gacctgtggg tgtaccacac ccagggctac 360
 ttccccgact ggcagaacta ccccccgcc cccggcatcc gctacccctt gaccttcggc 420
 tgggtgcttca agctgggtgcc cgtggacccc gaggaggtgg agaaggccaa cgagggcgag 480
 aacaactgcc tgctgcaccc catgtcccag caccggcatg aggacgagga ccgcgaggtg 540
 ctgatctgga agttcgactc ccgcctggcc ctgcgccaca tcgcccgcga gcgccacccc 600
 gagttctacc aggactaa 618

<210> 190
 <211> 205
 <212> PRT
 <213> Human immunodeficiency virus

<400> 190
 Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Thr Ile
 1 5 10 15
 Arg Glu Arg Ile Arg Arg Thr Pro Val Ala Ala Glu Gly Val Gly Ala
 20 25 30
 Val Ser Gln Asp Leu Asp Lys His Gly Ala Ile Thr Ser Ser Asn Thr
 35 40 45
 Arg Ala Thr Asn Ala Asp Leu Ala Trp Leu Glu Ala Gln Glu Asp Glu
 50 55 60
 Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr
 65 70 75 80
 Tyr Lys Ala Ala Phe Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly
 85 90 95
 Leu Glu Gly Leu Ile Tyr Ser Lys Lys Arg Gln Glu Ile Leu Asp Leu
 100 105 110
 Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr
 115 120 125
 Pro Gly Pro Gly Thr Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe Lys
 130 135 140
 Leu Val Pro Val Asp Pro Glu Glu Val Glu Lys Ala Asn Glu Gly Glu
 145 150 155 160
 Asn Asn Cys Leu Leu His Pro Met Ser Leu His Gly Met Glu Asp Glu
 165 170 175

Asp Arg Glu Val Leu Lys Trp Lys Phe Asp Ser Arg Leu Ala Leu Arg
180 185 190

His Ile Ala Arg Glu Arg His Pro Glu Tyr Tyr Lys Asp
195 200 205

<210> 191
<211> 618
<212> DNA
<213> Human immunodeficiency virus

<400> 191
atgggaggca agtgggtccaa gtcctccatc gtgggctggc ccaccatccg cgagcgcac 60
cgccgcaccc ccgtggccgc cgagggcggtg ggcgccgtgt cccaggacct ggacaagcac 120
ggcgccatca cctcctccaa caccgcgcc accaacgccg acctggcctg gctggaggcc 180
caggaggacg aggaggtggg cttccccgtg cgccccaggt tggccctgcg ccccatgacc 240
tacaaggccg ctttcgacct gtcccacttc ctgaaggaga agggcggcct ggagggcctg 300
atctactcca agaagcgcca ggagatcctg gacctgtggg tgtaccacac ccagggctac 360
ttccccgact ggcagaacta ccccccggc cccggcacc gctacccctt gaccttcggc 420
tggtgcttca agctgggtgcc cgtggacccc gaggaggtgg agaaggccaa cgagggcgag 480
aacaactgcc tgctgcaccc catgtccctg caccgcatgg aggacgagga ccgcgaggtg 540
ctgaagtgga agttcgactc ccgctgggcc ctgcgccaca tcgcccgcga gcgccacccc 600
gagtactaca aggactaa 618

<210> 192
<211> 207
<212> PRT
<213> Human immunodeficiency virus

<400> 192
Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Glu Val
1 5 10 15

Arg Glu Arg Ile Arg Gln Thr Pro Pro Ala Ala Glu Gly Val Gly Ala
20 25 30

Val Ser Gln Asp Leu Ala Arg His Gly Ala Ile Thr Ser Ser Asn Thr
35 40 45

Ala Ala Asn Asn Pro Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Asp
50 55 60

Ser Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
65 70 75 80

Thr Tyr Lys Gly Ala Phe Asp Leu Ser Phe Phe Leu Lys Glu Lys Gly
85 90 95

Gly Leu Asp Gly Leu Ile Tyr Ser Lys Lys Arg Gln Asp Ile Leu Asp
100 105 110

Leu Trp Val Tyr Asn Thr Gln Gly Phe Phe Pro Asp Trp Gln Asn Tyr
115 120 125

Thr Pro Gly Pro Gly Thr Arg Phe Pro Leu Thr Phe Gly Trp Cys Phe
 130 135 140
 Lys Leu Val Pro Met Asp Pro Ala Glu Val Glu Glu Ala Asn Lys Gly
 145 150 155 160
 Glu Asn Asn Ser Leu Leu His Pro Ile Cys Gln His Gly Met Glu Asp
 165 170 175
 Glu Asp Arg Glu Val Leu Val Trp Arg Phe Asp Ser Ser Leu Ala Arg
 180 185 190
 Arg His Ile Ala Arg Glu Leu His Pro Glu Tyr Tyr Lys Asp Cys
 195 200 205

<210> 193
 <211> 624
 <212> DNA
 <213> Human immunodeficiency virus

<400> 193
 atgggcgga agtgggtccaa gtcctccatc gtgggctggc ccgaggtgcg cgagcgcac 60
 cgccagaccc cccccgccgc cgagggcggtg ggcgccgtgt cccaggacct ggcccgccac 120
 ggcgccatca cctcctccaa caccgccgcc aacaaccccg actgcgcctg gctggaggcc 180
 caggaggagg actccgaggt gggcttcccc gtgcgcccc aggtgcccct gcgcccctg 240
 acctacaagg gcgccttcga cctgtccttc ttctgaagg agaaggcgcg cctggacggc 300
 ctgatctact ccaagaagcg ccaggacatc ctggacctgt ggggtgtacaa caccaggggc 360
 ttcttccccg actggcagaa ctacaccccc ggccccggca cccgcttccc cctgaccttc 420
 ggctgggtgct tcaagctggt gcccattggac cccgccgagg tggaggaggc caacaagggc 480
 gagaacaact ccctgctgca ccccatctgc cagcacggca tggaggacga ggaccgcgag 540
 gtgctggtgt ggcgcttcga ctctccctg gcccgccgcc acatcgcccg cgagctgcac 600
 cccgagtact acaaggactg ctaa 624

<210> 194
 <211> 207
 <212> PRT
 <213> Human immunodeficiency virus

<400> 194
 Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Gly Gly Trp Pro Ala Ile
 1 5 10 15
 Arg Glu Arg Ile Arg Arg Ala Glu Pro Ala Ala Glu Gly Val Gly Ala
 20 25 30
 Val Ser Arg Asp Leu Asp Arg Arg Gly Ala Val Thr Ile Asn Asn Thr
 35 40 45
 Ala Ser Thr Asn Pro Asp Ser Ala Trp Leu Glu Ala Gln Glu Glu Glu
 50 55 60
 Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
 65 70 75 80
 Thr Tyr Lys Gly Ala Phe Asp Leu Ser His Phe Leu Lys Glu Lys Gly

Asn Asn Ala Asp Cys Val Trp Leu Arg Ala Gln Glu Glu Glu Glu Val
 50 55 60
 Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr Tyr Lys
 65 70 75 80
 Gly Ala Phe Asp Leu Ser Phe Phe Leu Lys Glu Lys Gly Gly Leu Asp
 85 90 95
 Gly Leu Ile Tyr Ser Lys Lys Arg Gln Glu Ile Leu Asp Leu Trp Val
 100 105 110
 Tyr Asn Thr Gln Gly Phe Phe Pro Asp Trp Gln Asn Tyr Thr Pro Gly
 115 120 125
 Pro Gly Ile Arg Tyr Pro Leu Cys Phe Gly Trp Cys Phe Lys Leu Val
 130 135 140
 Pro Val Asp Pro Arg Glu Val Glu Glu Asp Asn Lys Gly Glu Asn Asn
 145 150 155 160
 Cys Leu Leu His Pro Met Ser Gln His Gly Ile Glu Asp Glu Glu Arg
 165 170 175
 Glu Val Leu Met Trp Lys Phe Asp Ser Ala Leu Ala Arg Lys His Ile
 180 185 190
 Ala Arg Glu Leu His Pro Glu Tyr Tyr Lys Asp Cys
 195 200

<210> 197
 <211> 615
 <212> DNA
 <213> Human immunodeficiency virus

<400> 197
 atggggcggca agtgggtccaa gtcctccatc gtgggctggc cccaggtgcg cgagcgcac 60
 aagcagaccc cccccgccac cgagggcggtg ggcgcggtgt cccaggacct ggacaagcac 120
 ggcgcggtga cctcctccaa catgaacaac gccgactgcg tgtggctgcg cgcccaggag 180
 gaggaggagg tgggcttccc cgtgcgcccc caggtgcccc tgcgccccat gacctacaag 240
 ggcgccttcg acctgtcctt cttcctgaag gagaagggcg gcctggacgg cctgatctac 300
 tccaagaagc gccaggagat cctggacctg tgggtgtaca acaccagggt cttcttcccc 360
 gactggcaga actacacccc cggccccggc atccgctacc ccctgtgctt cggctgggtgc 420
 ttcaagctgg tgcccgtgga cccccgcgag gtggaggagg acaacaaggg cgagaacaac 480
 tgctgtgctg accccatgtc ccagcacggc atcgaggacg aggagcgcg ggtgctgatg 540
 tggaagtctg actccgcctt ggccccgcaag cacatcgccc gcgagctgca ccccgagtac 600
 tacaaggact gctaa 615

<210> 198
 <211> 207
 <212> PRT
 <213> Human immunodeficiency virus

<400> 198

Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Gln Val
 1 5 10 15
 Arg Glu Arg Ile Arg Arg Ala Pro Ala Pro Ala Ala Arg Gly Val Gly
 20 25 30
 Pro Val Ser Gln Asp Leu Asp Lys Tyr Gly Ala Val Thr Ser Ser Asn
 35 40 45
 Thr Ala Ala Asn Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln Lys Glu
 50 55 60
 Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
 65 70 75 80
 Thr Tyr Lys Gly Ala Phe Asp Leu Ser His Phe Leu Lys Glu Lys Gly
 85 90 95
 Gly Leu Asp Gly Leu Ile Tyr Ser Lys Lys Arg Gln Glu Ile Leu Asp
 100 105 110
 Leu Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr
 115 120 125
 Thr Pro Gly Pro Gly Ile Arg Phe Pro Leu Thr Phe Gly Trp Cys Tyr
 130 135 140
 Lys Leu Val Pro Val Asp Pro Asp Glu Val Glu Glu Ala Thr Glu Gly
 145 150 155 160
 Glu Asn Asn Ser Leu Leu His Pro Ile Cys Gln His Gly Met Asp Asp
 165 170 175
 Glu Glu Lys Glu Val Leu Met Trp Lys Phe Asp Ser Arg Leu Ala Leu
 180 185 190
 Thr His Arg Ala Arg Glu Leu His Pro Glu Phe Tyr Lys Asp Cys
 195 200 205

<210> 199

<211> 624

<212> DNA

<213> Human immunodeficiency virus

<400> 199

atgggaggca agtgggtccaa gtcctccatc gtgggctggc cccaggtgcg cgagcgcac 60
 cgccgcgccc ccgccccgc cgcccgcggc gtgggccccg tgtcccagga cctggacaag 120
 tacggcgccg tgacctctc caacaccgcc gccacaacg ccgactgcgc ctggctggag 180
 gccagaagg aggaggaggt gggcttcccc gtgcgcccc aggtgcccct gcgccccatg 240
 acctacaagg gcgccttcga cctgtccac ttctgaagg agaagggcgg cctggacggc 300
 ctgatctact ccaagaagcg ccaggagatc ctggacctgt ggggtgtacca caccagggc 360
 tacttccccg actggcagaa ctacaccccc ggccccggca tccgcttccc cctgaccttc 420
 ggctggtgct acaagctggt gcccggtggac cccgacgagg tggaggaggc caccgagggc 480
 gagaacaact ccctgctgca ccccatctgc cagcacggca tggacgacga ggagaaggag 540
 gtgctgatgt ggaagttcga ctccgcctg gccctgacct accgcgcccc cgagctgcac 600
 ccgagttct acaaggactg ctaa 624

<210> 200
<211> 212
<212> PRT
<213> Human immunodeficiency virus

<400> 200
Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Ala Ile
1 5 10 15
Arg Glu Arg Met Arg Gln Arg Gly Pro Ala Gln Ala Glu Pro Ala Ala
20 25 30
Ala Gly Val Gly Ala Val Ser Gln Asp Leu Asp Lys His Gly Ala Ile
35 40 45
Thr Ser Ser Asn Thr Ala Ala Thr Asn Pro Asp Lys Ala Trp Leu Glu
50 55 60
Ala Gln Glu Glu Glu Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val
65 70 75 80
Pro Leu Arg Pro Met Thr Phe Lys Ala Ala Leu Asp Leu Ser His Phe
85 90 95
Leu Lys Glu Lys Gly Gly Leu Asp Gly Leu Ile Tyr Ser Lys Lys Arg
100 105 110
Gln Glu Ile Leu Asp Leu Trp Val Tyr Asn Thr Gln Gly Tyr Phe Pro
115 120 125
Asp Trp Gln Asn Tyr Thr Pro Gly Pro Gly Glu Arg Phe Pro Leu Cys
130 135 140
Phe Gly Trp Cys Phe Lys Leu Val Pro Val Asp Pro Gln Glu Val Glu
145 150 155 160
Glu Ala Thr Glu Gly Glu Asn Asn Cys Leu Leu His Pro Ile Ser Gln
165 170 175
His Gly Met Glu Asp Glu Glu Arg Glu Val Leu Lys Trp Lys Phe Asp
180 185 190
Ser Arg Leu Ala Tyr Lys His Ile Ala Arg Glu Leu His Pro Glu Phe
195 200 205
Tyr Lys Asp Cys
210

<210> 201
<211> 639
<212> DNA
<213> Human immunodeficiency virus

<400> 201

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atgggaggca agtgggtccaa gtcctccatc gtgggctggc cgcgccatccg cgagcgcgatg 60
cgccagcgcg gccccgcccc ggccgagccc gccgcgcgcg gcgtggggcg cgtgtcccag 120
gacctggaca agcacggcgc catcacctcc tccaacaccg ccgccaccaa ccccgacaag 180
gcctggctgg agggccagga ggaggaggag gaggtgggct tccccgtgcg cccccagggtg 240
cccctgcgcc ccatgacctt caaggccgcc ctggacctgt cccacttctt gaaggagaag 300
ggcggcctgg acggcctgat ctactccaag aagcgccagg agatcctgga cctgtgggtg 360
tacaacaccc agggctactt ccccgactgg cagaactaca cccccggccc cggcgagcgc 420
ttccccctgt gcttcggctg gtgcttcaag ctggtgcccg tggacccccca ggaggtggag 480
gagggcaccg agggcgagaa caactgcctg ctgcacccca tctcccagca cggcatggag 540
gacgaggagc gcgaggtgct gaagtggaag ttcgactccc gcctggccta caagcacatc 600
gccgcgagc tgcaccccg gttctacaag gactgctaa 639

```

<210> 202

<211> 208

<212> PRT

<213> Human immunodeficiency virus

<400> 202

```

Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Gln Val
  1              5              10              15

Arg Glu Arg Met Arg Asn Pro Pro Thr Glu Gly Ala Ala Glu Gly Val
          20              25              30

Gly Ala Val Ser Gln Asp Leu Asp Lys His Gly Ala Ile Thr Ser Ser
      35              40              45

Asn Thr Ala Thr Thr Asn Ala Ala Cys Ala Trp Leu Glu Ala Gln Thr
      50              55              60

Glu Asp Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro
      65              70              75              80

Met Thr Tyr Lys Gly Ala Phe Asp Leu Ser Phe Phe Leu Lys Glu Lys
          85              90              95

Gly Gly Leu Asp Gly Leu Ile Tyr Ser Lys Lys Arg Gln Glu Ile Leu
      100              105              110

Asp Leu Trp Val Tyr His Thr Gln Gly Phe Phe Pro Asp Trp Gln Asn
      115              120              125

Tyr Thr Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys
      130              135              140

Tyr Lys Leu Val Pro Val Asp Pro Lys Glu Val Glu Glu Asp Thr Lys
      145              150              155              160

Gly Glu Asn Asn Cys Leu Leu His Pro Met Cys Gln His Gly Val Glu
          165              170              175

Asp Glu Glu Arg Glu Val Leu Met Trp Lys Phe Asp Ser Ser Leu Ala
          180              185              190

Arg Arg His Ile Ala Arg Glu Met His Pro Glu Phe Tyr Lys Asp Cys
      195              200              205

```

<210> 203
<211> 627
<212> DNA
<213> Human immunodeficiency virus

<400> 203
atgggcgggca agtgggtccaa gtcctccatc gtgggctggc cccaggtgcg cgagcgcgatg 60
cgcaaccccc ccaccgaggg cgccgcccag ggcgtgggcg ccgtgtccca ggacctggac 120
aagcacggcg ccatcacctc ctccaacacc gccaccacca acgccgcctg cgcttggtg 180
gaggcccaga ccgaggacga ggtgggcttc cccgtgccc cccaggtgcc cctgcgcccc 240
atgacctaca agggcgctt cgacctgtcc ttcttcctga aggagaagg cggcctggac 300
ggcctgatct actccaagaa gcgccaggag atcctggacc tgtgggtgta ccacaccag 360
ggcttcttcc ccgactggca gaactacacc cccggccccg gcatccgcta ccccctgacc 420
ttcggtggt gctacaagct ggtgcccgtg gacccaagg aggtggagga ggacaccaag 480
ggcgagaaca actgcctgct gcaccccatg tgccagcacg gcgtggagga cgaggagcgc 540
gaggtgctga tgtggaagtt cgactcctcc ctggcccgcg gccacatcgc ccgcgagatg 600
caccccgagt tctacaagga ctgctaa 627

<210> 204
<211> 206
<212> PRT
<213> Human immunodeficiency virus

<400> 204
Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Ala Ile
1 5 10 15
Arg Glu Arg Ile Arg Arg Thr Glu Pro Ala Ala Asp Gly Val Gly Ala
20 25 30
Val Ser Arg Asp Leu Glu Lys His Gly Ala Ile Thr Ser Ser Asn Thr
35 40 45
Ala Asp Thr Asn Ala Asp Cys Ala Trp Leu Glu Thr Gln Glu Glu Glu
50 55 60
Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr
65 70 75 80
Phe Lys Gly Ala Leu Asp Leu Ser Phe Phe Leu Lys Glu Lys Gly Gly
85 90 95
Leu Glu Gly Leu Ile Tyr Ser Lys Lys Arg Gln Glu Ile Leu Asp Leu
100 105 110
Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp His Asn Tyr Thr
115 120 125
Pro Gly Pro Gly Val Arg Phe Pro Leu Thr Phe Gly Trp Cys Phe Lys
130 135 140

Leu Val Pro Val Asp Pro Arg Glu Val Glu Glu Ala Asn Glu Gly Glu
145 150 155 160

Asp Asn Cys Leu Leu His Pro Val Cys Gln His Gly Met Glu Asp Glu
165 170 175

His Arg Glu Val Leu Lys Trp Lys Phe Asp Ser Gln Leu Ala His Arg
180 185 190

His Arg Ala Arg Glu Leu His Pro Glu Phe Tyr Lys Asp Cys
195 200 205

<210> 205

<211> 621

<212> DNA

<213> Human immunodeficiency virus

<400> 205

atgggaggca agtgggtccaa gtcctccatc gtgggctggc ccgccatccg cgagcgcac 60
cgccgcaccg agcccgccgc cgacggcgtg ggcgccgtgt cccgcgacct ggagaagcac 120
ggcgccatca ctcctccaa caccgcccgc accaacgccg actgcgcctg gctggagacc 180
caggaggagg aggaggtggg ctccccgtg cgcgcccgagg tgccctcgcg ccccatgacc 240
ttcaagggcg ccctggacct gtccttcttc ctgaaggaga agggcgccct ggagggcctg 300
atctactcca agaagcgcca ggagatcctg gacctgtggg tgtaccacac ccagggctac 360
ttccccgact ggcaacaact caccgccggc cccggcgtgc gcttccccct gaccttcggc 420
tggtgcttca agctggtgcc cgtggacccc cgcgaggtgg aggaggccaa cgagggcgag 480
gacaactgcc tgcgtcaccc cgtgtgccag cacggcatgg aggacgagca ccgcgaggtg 540
ctgaagtgga agttcgactc ccagctggcc caccgccacc gcgccgcga gctgcacccc 600
gagttctaca aggactgcta a 621

<210> 206

<211> 207

<212> PRT

<213> Human immunodeficiency virus

<400> 206

Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Ala Val
1 5 10 15

Arg Glu Arg Ile Arg Arg Thr Asp Pro Ala Ala Glu Gly Val Gly Ala
20 25 30

Ala Ser Arg Asp Leu Glu Lys Tyr Gly Ala Ile Thr Ser Ser Asn Thr
35 40 45

Ala Gln Thr Asn Pro Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu
50 55 60

Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
65 70 75 80

Thr Tyr Lys Gly Ala Phe Asp Leu Ser Phe Phe Leu Lys Glu Lys Gly
85 90 95

Gly Leu Glu Gly Leu Ile Tyr Ser Lys Arg Arg Gln Asp Ile Leu Asp

100	105	110
Leu Trp Val Tyr Asn Thr Gln Gly Phe Phe Pro Asp Trp Gln Asn Tyr		
115	120	125
Thr Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Tyr		
130	135	140
Lys Leu Val Pro Val Asp Pro Arg Glu Val Glu Glu Ala Asn Glu Gly		
145	150	155
Glu Asn Asn Ser Leu Leu His Pro Met Ser Leu His Gly Met Glu Asp		
165	170	175
Pro His Gly Glu Val Leu Met Trp Lys Phe Asp Ser Asn Leu Ala His		
180	185	190
Lys His Met Ala Arg Glu Leu His Pro Glu Tyr Tyr Lys Asp Cys		
195	200	205

<210> 207
 <211> 624
 <212> DNA
 <213> Human immunodeficiency virus

<400> 207
 atgggcgga agtgggtccaa gtccctccatc gtggggtggc ccgccgtgcg cgagcgcac 60
 cgccgcaccg accccgcccgc cgagggcggtg ggcgcgcct cccgcgacct ggagaagtac 120
 ggcgccatca cctcctccaa caccgcccag accaaccgcc actgcgcctg gctggaggcc 180
 caggaggagg aggaggaggt gggcttcccc gtgcgcccc aggtgcccc gcgccccatg 240
 acctacaagg gcgccttcga cctgtccttc ttctgaagg agaaggcgcg cctggagggc 300
 ctgatctact ccaagcgccg ccaggacatc ctggacctgt ggggtgtacaa caccagggc 360
 ttcttccccg actggcagaa ctacaccccc ggccccggca tccgctaccc cctgaccttc 420
 ggctgggtgct acaagctggt gcccgtggac ccccgcgagg tggaggaggc caacgagggc 480
 gagaacaact ccctgctgca ccccatgtcc ctgcacggca tggaggaccc ccacggcgag 540
 gtgctgatgt ggaagttcga ctccaacctg gccacacaagc acatggcccc cgagctgcac 600
 ccgagtact acaaggactg ctaa 624

<210> 208
 <211> 208
 <212> PRT
 <213> Human immunodeficiency virus

<400> 208
 Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Glu Ile
 1 5 10 15
 Arg Glu Arg Leu Arg Arg Thr Pro Pro Thr Ala Ala Ala Glu Gly Val
 20 25 30
 Gly Ala Val Ser Lys Asp Leu Glu Lys His Gly Ala Val Thr Ser Ser
 35 40 45
 Asn Thr Ala Gln Thr Asn Ala Ala Cys Ala Trp Leu Glu Ala Gln Glu
 50 55 60

Glu	Glu	Glu	Val	Gly	Phe	Pro	Val	Arg	Pro	Gln	Val	Pro	Leu	Arg	Pro
65					70					75					80
Met	Thr	Tyr	Lys	Gly	Ala	Phe	Asp	Leu	Gly	Phe	Phe	Leu	Lys	Glu	Lys
				85					90					95	
Gly	Gly	Leu	Asp	Gly	Leu	Ile	Tyr	Ser	Lys	Lys	Arg	Gln	Glu	Ile	Leu
			100					105					110		
Asp	Leu	Trp	Val	Tyr	His	Thr	Gln	Gly	Tyr	Phe	Pro	Asp	Trp	Gln	Asn
	115						120					125			
Tyr	Thr	Pro	Gly	Pro	Gly	Ile	Arg	Tyr	Pro	Leu	Cys	Phe	Gly	Trp	Cys
	130					135					140				
Phe	Lys	Leu	Val	Pro	Val	Glu	Pro	Arg	Glu	Val	Glu	Glu	Ala	Asn	Glu
145					150					155					160
Gly	Glu	Asn	Asn	Cys	Leu	Leu	His	Pro	Met	Ser	Gln	His	Gly	Met	Asp
				165					170					175	
Asp	Glu	Glu	Arg	Glu	Val	Leu	Met	Trp	Lys	Phe	Asp	Ser	Ser	Leu	Ala
			180					185					190		
Arg	Arg	His	Ile	Ala	Arg	Glu	Leu	His	Pro	Asp	Phe	Tyr	Lys	Asp	Cys
		195					200					205			

<210> 209
 <211> 627
 <212> DNA
 <213> Human immunodeficiency virus

<400> 209
 atgggcgga agtggtccaa gtcctccatc gtgggctggc ccgagatccg cgagcgccctg 60
 cgccgcaccc cccccaccgc cgccgcccag ggcgtgggag ccgtgtccaa ggacctggag 120
 aagcacggcg ccgtgacctc ctccaacacc gccagacca acgcccgcctg cgccctggctg 180
 gaggcccagg aggaggagga ggtgggcttc cccgtgcgcc ccaggtgcc cctgcgcccc 240
 atgacctaca agggcgccct cgacctgggc ttcttctga aggagaagg cgccctggac 300
 ggctgatct actccaagaa gcgccaggag atcctggacc tgtgggtgta ccacaccag 360
 ggctacttcc ccgactggca gaactacacc cccggccccg gcatccgcta cccctgtgc 420
 ttcggctggt gcttcaagct ggtgcccgtg gagccccgcg aggtggagga ggccaacgag 480
 ggcgagaaca actgcctgct gcaccccatg tcccagcacg gcatggacga cgaggagcgc 540
 gaggtgctga tgtggaagtt cgactcctcc ctggcccgcg gccacatcgc ccgcgagctg 600
 caccgcgact tctacaagga ctgctaa 627

<210> 210
 <211> 206
 <212> PRT
 <213> Human immunodeficiency virus

<400> 210

Met Gly Gly Lys Trp Ser Lys Ser Ser Ile Val Gly Trp Pro Asp Ile
 1 5 10 15
 Arg Glu Arg Met Arg Arg Ala Pro Pro Ala Ala Glu Gly Val Gly Ala
 20 25 30
 Val Ser Gln Asp Leu Glu Asn Arg Gly Ala Ile Thr Ser Ser Asn Thr
 35 40 45
 Arg Ala Asn Asn Pro Asp Leu Ala Trp Leu Glu Ala Gln Glu Glu Glu
 50 55 60
 Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr
 65 70 75 80
 Tyr Lys Gly Ala Leu Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly
 85 90 95
 Leu Glu Gly Leu Ile Tyr Ser Lys Lys Arg Gln Glu Ile Leu Asp Leu
 100 105 110
 Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr
 115 120 125
 Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe Lys
 130 135 140
 Leu Val Pro Val Asp Pro Glu Glu Val Glu Lys Ala Asn Glu Gly Glu
 145 150 155 160
 Asn Asn Cys Leu Leu His Pro Met Ser Gln His Gly Met Glu Asp Glu
 165 170 175
 Asp Arg Glu Val Leu Met Trp Lys Phe Asp Ser Arg Leu Ala Leu Arg
 180 185 190
 His Ile Ala Arg Glu Lys His Pro Glu Phe Tyr Gln Asp Cys
 195 200 205

<210> 211

<211> 621

<212> DNA

<213> Human immunodeficiency virus

<400> 211

atgggcgga agtgggtccaa gtccctccatc gtgggctggc cgcacatccg cgagcgcgatg 60
 cgccgcgccc cccccgcgc cgagggcggtg ggcgcggtgt cccaggacct ggagaaccgc 120
 ggcgccatca cctcctccaa caccgcgcgc aacaaccccg acctggcctg gctggaggcc 180
 caggaggagg aggaggtggg cttccccgtg cgcccccagg tgcccctgcg ccccatgacc 240
 tacaagggcg ccctggacct gtcccacttc ctgaaggaga agggcggcct ggagggcctg 300
 atctactcca agaagcgcca ggagatcctg gacctgtggg tgtaccacac ccagggtctac 360
 ttccccgact ggcagaacta ccccccggc cccggcatcc gctacccctt gaccttcggc 420
 tggtgcttca agctgggtgcc cgtggacccc gaggaggtgg agaaggccaa cgagggcgag 480
 aacaactgcc tgctgcaccc catgtcccag cacggcatgg aggacgagga ccgcgaggtg 540
 ctgatgtgga agttcgactc ccgcctggcc ctgcgccaca tcgcccgcga gaagcaccgc 600
 gagttctacc aggactgcta a 621

<210> 212
 <211> 207
 <212> PRT
 <213> Human immunodeficiency virus

<400> 212
 Met Gly Gly Lys Trp Ser Lys Cys Ser Ile Val Gly Trp Pro Glu Val
 1 5 10 15
 Arg Glu Arg Ile Arg Arg Thr Pro Pro Ala Ala Val Gly Val Gly Ala
 20 25 30
 Val Ser Gln Asp Leu Ala Lys His Gly Ala Ile Thr Ser Ser Asn Thr
 35 40 45
 Ala Ala Asn Asn Pro Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Asp
 50 55 60
 Ser Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
 65 70 75 80
 Thr Tyr Lys Gly Ala Phe Asp Leu Ser Phe Phe Leu Lys Glu Lys Gly
 85 90 95
 Gly Leu Asp Gly Leu Ile Tyr Ser Lys Gln Arg Gln Asp Ile Leu Asp
 100 105 110
 Leu Trp Val Tyr Asn Thr Gln Gly Phe Phe Pro Asp Trp Gln Asn Tyr
 115 120 125
 Thr Pro Gly Pro Gly Thr Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe
 130 135 140
 Lys Leu Glu Pro Val Asp Pro Ala Glu Val Glu Glu Ala Thr Lys Gly
 145 150 155 160
 Glu Asn Asn Ser Leu Leu His Pro Ile Cys Gln His Gly Met Glu Asp
 165 170 175
 Ala Asp Asn Glu Val Leu Ile Trp Arg Phe Asp Ser Ser Leu Ala Arg
 180 185 190
 Arg His Ile Ala Arg Glu Leu His Pro Asp Phe Tyr Lys Asp Cys
 195 200 205

<210> 213
 <211> 624
 <212> DNA
 <213> Human immunodeficiency virus

<400> 213
 atgggaggca agtgggtccaa gtgctccatc gtgggctggc ccgaggtgcg cgagcgcac 60
 cgccgcaccc ccccgccgc cgtgggcgtg ggcgcgtgt cccaggacct ggccaagcac 120
 ggcgccatca ctcctccaa caccgccgcc aacaaccccg actgcgcctg gctggaggcc 180

```

caggaggagg actccgaggt gggcttcccc gtgcgcccc aggtgcccct gcgccccatg 240
acctacaagg gcgccttcga cctgtccttc ttcctgaagg agaagggcgg cctggacggc 300
ctgatctact ccaagcagcg ccaggacatc ctggacctgt ggggtgtacaa caccagggc 360
ttcttccccg actggcagaa ctacaccccc ggccccggca cccgctaccc cctgaccttc 420
ggctgggtgct tcaagctgga gcccggtggac cccgccgagg tggaggaggc caccaagggc 480
gagaacaact ccctgctgca ccccatctgc cagcacggca tggaggacgc cgacaacgag 540
gtgctgatct ggcgcttcga ctctccctg gcccgccgcc acatcgcccg cgagctgcac 600
cccgacttct acaaggactg ctaa                                     624

```

<210> 214

<211> 1002

<212> PRT

<213> Human immunodeficiency virus

<400> 214

```

Phe Phe Arg Glu Asn Leu Ala Phe Gln Gln Gly Glu Ala Arg Glu Phe
  1               5               10               15

```

```

Ser Ser Glu Gln Thr Arg Ala Asn Ser Pro Thr Ser Arg Glu Leu Arg
          20               25               30

```

```

Val Arg Gly Gly Asp Asn Pro Leu Ser Glu Ala Gly Ala Glu Arg Gln
      35               40               45

```

```

Gly Thr Val Ser Leu Ser Phe Pro Gln Ile Thr Leu Trp Gln Arg Pro
  50               55               60

```

```

Leu Val Thr Val Lys Ile Gly Gly Gln Leu Lys Glu Ala Leu Leu Asp
  65               70               75               80

```

```

Thr Gly Ala Asp Asp Thr Val Leu Glu Glu Ile Asn Leu Pro Gly Lys
          85               90               95

```

```

Trp Lys Pro Lys Met Ile Gly Gly Ile Gly Gly Phe Ile Lys Val Arg
      100               105               110

```

```

Gln Tyr Asp Gln Ile Leu Ile Glu Ile Cys Gly Lys Lys Ala Ile Gly
      115               120               125

```

```

Thr Val Leu Val Gly Pro Thr Pro Val Asn Ile Ile Gly Arg Asn Met
      130               135               140

```

```

Leu Thr Gln Ile Gly Cys Thr Leu Asn Phe Pro Ile Ser Pro Ile Glu
      145               150               155               160

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Thr Val Pro Val Lys Leu Lys Pro Gly Met Asp Gly Pro Lys Val Lys
          165               170               175

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Gln Trp Pro Leu Thr Glu Glu Lys Ile Lys Ala Leu Thr Glu Ile Cys
      180               185               190

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Thr Glu Met Glu Lys Glu Gly Lys Ile Ser Lys Ile Gly Pro Glu Asn
      195               200               205

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Pro Tyr Asn Thr Pro Ile Phe Ala Ile Lys Lys Lys Asp Ser Thr Lys
      210               215               220

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Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	Asp	
225					230					235					240	
Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	Lys	
				245					250					255		
Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	Val	
			260					265					270			
Pro	Leu	Asp	Glu	Asp	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser	
		275					280					285				
Ile	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	Pro	
	290					295					300					
Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	Lys	
305					310					315					320	
Ile	Leu	Glu	Pro	Phe	Arg	Thr	Gln	Asn	Pro	Glu	Ile	Val	Ile	Tyr	Gln	
				325					330					335		
Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	His	
		340						345					350			
Arg	Thr	Lys	Ile	Glu	Glu	Leu	Arg	Glu	His	Leu	Leu	Arg	Trp	Gly	Phe	
		355					360					365				
Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	Met	
	370					375					380					
Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Gln	Leu	
385					390					395					400	
Pro	Glu	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	Gly	
			405						410					415		
Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Lys	Gln	
			420					425					430			
Leu	Cys	Lys	Leu	Leu	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Ile	Val	Pro	
	435						440					445				
Leu	Thr	Glu	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	Leu	
	450					455					460					
Lys	Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	Ile	
465					470					475					480	
Ala	Glu	Ile	Gln	Lys	Gln	Gly	Gln	Asp	Gln	Trp	Thr	Tyr	Gln	Ile	Tyr	
			485					490						495		
Gln	Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Lys	Met	Arg	
			500					505					510			
Ser	Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Ala	Val	Gln	Lys	
		515					520					525				

Ile	Ala	Thr	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	Arg		
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Leu	Pro	Ile	Gln	Lys	Glu	Thr	Trp	Glu	Thr	Trp	Trp	Thr	Glu	Tyr	Trp		
545					550					555					560		
Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	Leu		
				565					570						575		
Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Lys	Glu	Pro	Ile	Val	Gly	Ala	Glu		
			580					585					590				
Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Leu	Gly	Lys		
		595					600					605					
Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Val	Val	Ser	Leu	Thr		
610						615					620						
Glu	Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	Gln	Ala	Ile	His	Leu	Ala	Leu		
625					630					635					640		
Gln	Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	Ala		
				645					650					655			
Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Lys	Ser	Glu	Ser	Glu	Leu	Val		
			660					665					670				
Asn	Gln	Ile	Ile	Glu	Gln	Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu	Ser		
		675					680					685					
Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	Lys		
		690				695					700						
Leu	Val	Ser	Thr	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	Asp		
705					710					715					720		
Lys	Ala	Gln	Glu	Glu	His	Glu	Lys	Tyr	His	Ser	Asn	Trp	Arg	Ala	Met		
				725					730					735			
Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Ile	Val	Ala	Lys	Glu	Ile	Val	Ala		
			740					745					750				
Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	Val		
		755					760					765					
Asp	Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	Gly		
		770				775					780						
Lys	Ile	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	Ala		
785					790					795					800		
Glu	Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Ile	Leu		
				805					810					815			
Lys	Leu	Ala	Gly	Arg	Trp	Pro	Val	Lys	Val	Ile	His	Thr	Asp	Asn	Gly		
			820					825					830				

Ser Asn Phe Thr Ser Ala Ala Val Lys Ala Ala Cys Trp Trp Ala Gly
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 Ile Gln Gln Glu Phe Gly Ile Pro Tyr Asn Pro Gln Ser Gln Gly Val
 850 855 860
 Val Glu Ser Met Asn Lys Glu Leu Lys Lys Ile Ile Gly Gln Val Arg
 865 870 875 880
 Asp Gln Ala Glu His Leu Lys Thr Ala Val Gln Met Ala Val Phe Ile
 885 890 895
 His Asn Phe Lys Arg Lys Gly Gly Ile Gly Gly Tyr Ser Ala Gly Glu
 900 905 910
 Arg Ile Ile Asp Ile Ile Ala Thr Asp Ile Gln Thr Lys Glu Leu Gln
 915 920 925
 Lys Gln Ile Thr Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg Asp Ser
 930 935 940
 Arg Asp Pro Ile Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly Glu
 945 950 955 960
 Gly Ala Val Val Ile Gln Asp Asn Ser Glu Ile Lys Val Val Pro Arg
 965 970 975
 Arg Lys Ala Lys Ile Ile Arg Asp Tyr Gly Lys Gln Met Ala Gly Asp
 980 985 990
 Asp Cys Val Ala Gly Arg Gln Asp Glu Asp
 995 1000

<210> 215

<211> 3009

<212> DNA

<213> Human immunodeficiency virus

<400> 215

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3009

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<210> 216

<211> 1002

<212> PRT

<213> Human immunodeficiency virus

<400> 216

Phe Phe Arg Glu Asn Leu Ala Phe Gln Gln Gly Glu Ala Arg Glu Phe
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Ser Ser Glu Gln Thr Arg Ala Asn Ser Pro Thr Ser Arg Glu Leu Arg
20 25 30

Val Arg Gly Gly Asp Asn Pro Leu Ser Glu Ala Gly Ala Glu Arg Gln
35 40 45

Gly Thr Val Ser Phe Ser Phe Pro Gln Ile Thr Leu Trp Gln Arg Pro
50 55 60

Leu Val Thr Ile Lys Ile Gly Gly Gln Leu Arg Glu Ala Leu Leu Asp
65 70 75 80

Thr	Gly	Ala	Asp	Asp	Thr	Val	Leu	Glu	Glu	Ile	Asn	Leu	Pro	Gly	Lys	
				85					90					95		
Trp	Lys	Pro	Lys	Met	Ile	Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys	Val	Arg	
			100					105					110			
Gln	Tyr	Asp	Gln	Ile	Leu	Ile	Glu	Ile	Cys	Gly	Lys	Lys	Ala	Ile	Gly	
		115					120					125				
Thr	Val	Leu	Val	Gly	Pro	Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn	Met	
	130					135					140					
Leu	Thr	Gln	Ile	Gly	Cys	Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile	Glu	
145					150					155					160	
Thr	Val	Pro	Val	Lys	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val	Lys	
				165					170					175		
Gln	Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Glu	Ile	Cys	
			180					185					190			
Thr	Glu	Met	Glu	Lys	Glu	Gly	Lys	Ile	Ser	Lys	Ile	Gly	Pro	Glu	Asn	
		195					200					205				
Pro	Tyr	Asn	Thr	Pro	Val	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	Lys	
	210					215					220					
Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	Asp	
225					230					235					240	
Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	Lys	
				245					250					255		
Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	Val	
			260					265					270			
Pro	Leu	Asp	Glu	Asp	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser	
		275					280					285				
Ile	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	Pro	
	290					295					300					
Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	Lys	
305					310					315					320	
Ile	Leu	Glu	Pro	Phe	Arg	Thr	Lys	Asn	Pro	Glu	Ile	Val	Ile	Tyr	Gln	
				325					330					335		
Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	His	
			340					345					350			
Arg	Ala	Lys	Ile	Glu	Glu	Leu	Arg	Glu	His	Leu	Leu	Arg	Trp	Gly	Phe	
		355					360					365				
Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	Met	
	370					375					380					

Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Gln	Leu	385	390	395	400
Pro	Glu	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	Gly	405	410	415	
Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Lys	Gln	420	425	430	
Leu	Cys	Lys	Leu	Leu	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Ile	Val	Pro	435	440	445	
Leu	Thr	Glu	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	Leu	450	455	460	
Lys	Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	Ile	465	470	475	480
Ala	Glu	Ile	Gln	Lys	Gln	Gly	Gln	Asp	Gln	Trp	Thr	Tyr	Gln	Ile	Tyr	485	490	495	
Gln	Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Lys	Met	Arg	500	505	510	
Ser	Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Ala	Val	Gln	Lys	515	520	525	
Ile	Ala	Thr	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	Arg	530	535	540	
Leu	Pro	Ile	Gln	Lys	Glu	Thr	Trp	Glu	Thr	Trp	Trp	Thr	Glu	Tyr	Trp	545	550	555	560
Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	Leu	565	570	575	
Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Lys	Glu	Pro	Ile	Val	Gly	Ala	Glu	580	585	590	
Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Leu	Gly	Lys	595	600	605	
Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Val	Val	Ser	Leu	Thr	610	615	620	
Glu	Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	Gln	Ala	Ile	His	Leu	Ala	Leu	625	630	635	640
Gln	Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	Ala	645	650	655	
Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Lys	Ser	Glu	Ser	Glu	Leu	Val	660	665	670	
Asn	Gln	Ile	Ile	Glu	Gln	Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu	Ser	675	680	685	

Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	Lys	690	695	700	
Leu	Val	Ser	Ser	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	Asp	705	710	715	720
Lys	Ala	Gln	Glu	Glu	His	Glu	Lys	Tyr	His	Ser	Asn	Trp	Arg	Ala	Met	725	730	735	
Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Val	Val	Ala	Lys	Glu	Ile	Val	Ala	740	745	750	
Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	Val	755	760	765	
Asp	Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	Gly	770	775	780	
Lys	Val	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	Ala	785	790	795	800
Glu	Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Ile	Leu	805	810	815	
Lys	Leu	Ala	Gly	Arg	Trp	Pro	Val	Lys	Val	Ile	His	Thr	Asp	Asn	Gly	820	825	830	
Ser	Asn	Phe	Thr	Ser	Ala	Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala	Gly	835	840	845	
Ile	Gln	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly	Val	850	855	860	
Val	Glu	Ser	Met	Asn	Lys	Glu	Leu	Lys	Lys	Ile	Ile	Gly	Gln	Val	Arg	865	870	875	880
Asp	Gln	Ala	Glu	His	Leu	Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe	Ile	885	890	895	
His	Asn	Phe	Lys	Arg	Lys	Gly	Gly	Ile	Gly	Gly	Tyr	Ser	Ala	Gly	Glu	900	905	910	
Arg	Ile	Ile	Asp	Ile	Ile	Ala	Thr	Asp	Ile	Gln	Thr	Lys	Glu	Leu	Gln	915	920	925	
Lys	Gln	Ile	Thr	Lys	Ile	Gln	Asn	Phe	Arg	Val	Tyr	Tyr	Arg	Asp	Ser	930	935	940	
Arg	Asp	Pro	Ile	Trp	Lys	Gly	Pro	Ala	Lys	Leu	Leu	Trp	Lys	Gly	Glu	945	950	955	960
Gly	Ala	Val	Val	Ile	Gln	Asp	Asn	Ser	Glu	Ile	Lys	Val	Val	Pro	Arg	965	970	975	
Arg	Lys	Ala	Lys	Ile	Ile	Arg	Asp	Tyr	Gly	Lys	Gln	Met	Ala	Gly	Asp	980	985	990	

Asp Cys Val Ala Gly Arg Gln Asp Glu Asp
995 1000

<210> 217

<211> 1003

<212> PRT

<213> Human immunodeficiency virus

<400> 217

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Asp Gly Gly Arg Asp Ser Leu Pro Ser Glu Ala Gly Ala Glu Arg Gln
35 40 45

Gly Thr Gly Pro Thr Phe Ser Phe Pro Gln Ile Thr Leu Trp Gln Arg
50 55 60

Pro Leu Val Thr Val Arg Ile Gly Gly Gln Leu Lys Glu Ala Leu Leu
65 70 75 80

Asp Thr Gly Ala Asp Asp Thr Val Leu Glu Asp Ile Asn Leu Pro Gly
85 90 95

Lys Trp Lys Pro Lys Met Ile Gly Gly Ile Gly Gly Phe Ile Lys Val
100 105 110

Lys Gln Tyr Asp Gln Ile Leu Ile Glu Ile Cys Gly Lys Lys Ala Ile
115 120 125

Gly Thr Val Leu Val Gly Pro Thr Pro Val Asn Ile Ile Gly Arg Asn
130 135 140

Met Leu Thr Gln Ile Gly Cys Thr Leu Asn Phe Pro Ile Ser Pro Ile
145 150 155 160

Glu Thr Val Pro Val Lys Leu Lys Pro Gly Met Asp Gly Pro Lys Val
165 170 175

Lys Gln Trp Pro Leu Thr Glu Glu Lys Ile Lys Ala Leu Thr Glu Ile
180 185 190

Cys Thr Glu Met Glu Lys Glu Gly Lys Ile Ser Lys Ile Gly Pro Glu
195 200 205

Asn Pro Tyr Asn Thr Pro Ile Phe Ala Ile Lys Lys Lys Asp Ser Thr
210 215 220

Lys Trp Arg Lys Leu Val Asp Phe Arg Glu Leu Asn Lys Arg Thr Gln
225 230 235 240

Asp Phe Trp Glu Val Gln Leu Gly Ile Pro His Pro Ala Gly Leu Lys

245										250					255				
Lys	Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser				
			260					265					270						
Val	Pro	Leu	Asp	Glu	Ser	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro				
		275					280					285							
Ser	Thr	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu				
	290					295					300								
Pro	Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr				
305					310					315					320				
Lys	Ile	Leu	Glu	Pro	Phe	Arg	Ser	Lys	Asn	Pro	Glu	Ile	Ile	Ile	Tyr				
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Gln	Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln				
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His	Arg	Thr	Lys	Ile	Glu	Glu	Leu	Arg	Ala	His	Leu	Leu	Ser	Trp	Gly				
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Phe	Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp				
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Met	Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Glu				
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Leu	Pro	Glu	Lys	Glu	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val				
				405					410					415					
Gly	Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Ala	Gly	Ile	Lys	Val	Lys				
			420					425					430						
Gln	Leu	Cys	Lys	Leu	Leu	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Ile	Val				
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	450					455					460								
Leu	Lys	Asp	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu				
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Ile	Ala	Glu	Ile	Gln	Lys	Gln	Gly	Gln	Asp	Gln	Trp	Thr	Tyr	Gln	Ile				
				485					490					495					
Tyr	Gln	Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Arg	Lys				
			500					505					510						
Arg	Ser	Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Ala	Glu	Val	Val	Gln				
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Lys	Val	Val	Met	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe				
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Lys	Leu	Pro	Ile	Gln	Lys	Glu	Thr	Trp	Glu	Thr	Trp	Trp	Met	Asp	Tyr				

545		550		555		560									
Trp	Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro
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Leu	Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Lys	Asp	Pro	Ile	Val	Gly	Ala
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Glu	Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Leu	Gly
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Lys	Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Val	Val	Ser	Leu
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Thr	Glu	Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	His	Ala	Ile	His	Leu	Ala
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Leu	Gln	Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr
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Ala	Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Arg	Ser	Glu	Ser	Glu	Leu
			660					665					670		
Val	Asn	Gln	Ile	Ile	Glu	Lys	Leu	Ile	Gly	Lys	Asp	Lys	Val	Tyr	Leu
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Ser	Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp
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Lys	Leu	Val	Ser	Ser	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile
705					710					715					720
Asp	Lys	Ala	Gln	Glu	Glu	His	Glu	Arg	Tyr	His	Ser	Asn	Trp	Arg	Ala
			725						730					735	
Met	Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Ile	Val	Ala	Lys	Glu	Ile	Val
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Ala	Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln
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785					790					795					800
Ala	Glu	Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Leu
			805						810					815	
Leu	Lys	Leu	Ala	Gly	Arg	Trp	Pro	Val	Lys	Val	Val	His	Thr	Asp	Asn
			820					825					830		
Gly	Ser	Asn	Phe	Thr	Ser	Ala	Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala
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Asn	Ile	Gln	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly

850	855	860
Val Val Glu Ser Met Asn Lys Glu Leu Lys Lys Ile Ile Gly Gln Val		
865	870	875 880
Arg Glu Gln Ala Glu His Leu Lys Thr Ala Val Gln Met Ala Val Phe		
	885	890 895
Ile His Asn Phe Lys Arg Lys Gly Gly Ile Gly Gly Tyr Ser Ala Gly		
	900	905 910
Glu Arg Ile Ile Asp Ile Ile Ala Thr Asp Ile Gln Thr Lys Glu Leu		
	915	920 925
Gln Lys Gln Ile Thr Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg Asp		
	930	935 940
Ser Arg Asp Pro Ile Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly		
945	950	955 960
Glu Gly Ala Val Val Ile Gln Asp Asn Ser Asp Ile Lys Val Val Pro		
	965	970 975
Arg Arg Lys Ala Lys Ile Ile Arg Asp Tyr Gly Lys Gln Met Ala Gly		
	980	985 990
Asp Asp Cys Val Ala Gly Arg Gln Asp Glu Asp		
	995	1000

<210> 218
 <211> 3009
 <212> DNA
 <213> Human immunodeficiency virus

<400> 218

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tccgaggccg	gcgcgagcg	ccagggcacc	gtgtccttct	ccttccccca	gatcaccctg	180
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<210> 219

<211> 3012

<212> DNA

<213> Human immunodeficiency virus

<400> 219

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gacgaggact aa 3012

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<210> 220
 <211> 1003
 <212> PRT
 <213> Human immunodeficiency virus

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<400> 220
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Ser Ser Glu Gln Thr Arg Ala Asn Ser Pro Thr Ser Arg Glu Leu Trp
          20             25             30

Asp Gly Gly Arg Asp Ser Leu Leu Ser Glu Ala Gly Ala Glu Arg Gln
 35             40             45

Gly Thr Val Pro Ser Phe Ser Phe Pro Gln Ile Thr Leu Trp Gln Arg
 50             55             60

Pro Leu Val Thr Val Lys Ile Gly Gly Gln Leu Lys Glu Ala Leu Leu
 65             70             75             80

Asp Thr Gly Ala Asp Asp Thr Val Leu Glu Asp Ile Asn Leu Pro Gly
          85             90             95

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Lys	Trp	Lys	Pro	Lys	Met	Ile	Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys	Val	100	105	110
Arg	Gln	Tyr	Asp	Gln	Ile	Leu	Ile	Glu	Ile	Cys	Gly	Lys	Lys	Ala	Ile	115	120	125
Gly	Thr	Val	Leu	Val	Gly	Pro	Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn	130	135	140
Met	Leu	Thr	Gln	Ile	Gly	Cys	Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile	145	150	155
Glu	Thr	Val	Pro	Val	Lys	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val	165	170	175
Lys	Gln	Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Glu	Ile	180	185	190
Cys	Thr	Glu	Met	Glu	Lys	Glu	Gly	Lys	Ile	Ser	Lys	Ile	Gly	Pro	Glu	195	200	205
Asn	Pro	Tyr	Asn	Thr	Pro	Val	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	210	215	220
Lys	Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	225	230	235
Asp	Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	245	250	255
Lys	Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	260	265	270
Val	Pro	Leu	Asp	Glu	Ser	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	275	280	285
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Lys	Ile	Leu	Glu	Pro	Phe	Arg	Ser	Lys	Asn	Pro	Glu	Ile	Val	Ile	Tyr	325	330	335
Gln	Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	340	345	350
His	Arg	Ala	Lys	Ile	Glu	Glu	Leu	Arg	Ala	His	Leu	Leu	Ser	Trp	Gly	355	360	365
Phe	Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	370	375	380
Met	Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Lys	385	390	395
																		400

Leu	Pro	Glu	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	405	410	415
Gly	Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Ala	Gly	Ile	Lys	Val	Lys	420	425	430
Gln	Leu	Cys	Lys	Leu	Leu	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Ile	Val	435	440	445
Thr	Leu	Thr	Glu	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	450	455	460
Leu	Lys	Asp	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	465	470	475
Val	Ala	Glu	Ile	Gln	Lys	Gln	Gly	Gln	Asp	Gln	Trp	Thr	Tyr	Gln	Ile	485	490	495
Tyr	Gln	Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Lys	Lys	500	505	510
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Glu	Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Leu	Gly	595	600	605
Lys	Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Val	Val	Ser	Leu	610	615	620
Thr	Glu	Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	His	Ala	Ile	His	Leu	Ala	625	630	635
Leu	Gln	Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	645	650	655
Ala	Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Arg	Ser	Glu	Ser	Glu	Leu	660	665	670
Val	Asn	Gln	Ile	Ile	Glu	Lys	Leu	Ile	Glu	Lys	Glu	Lys	Val	Tyr	Leu	675	680	685
Ser	Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	690	695	700

Lys	Leu	Val	Ser	Ser	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	705	710	715	720
Asp	Lys	Ala	Gln	Glu	Glu	His	Glu	Lys	Tyr	His	Ser	Asn	Trp	Arg	Ala	725	730	735	
Met	Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Ile	Val	Ala	Lys	Glu	Ile	Val	740	745	750	
Ala	Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	755	760	765	
Val	Asp	Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	770	775	780	
Gly	Lys	Val	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	785	790	795	800
Ala	Glu	Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Leu	805	810	815	
Leu	Lys	Leu	Ala	Gly	Arg	Trp	Pro	Val	Lys	Val	Val	His	Thr	Asp	Asn	820	825	830	
Gly	Ser	Asn	Phe	Thr	Ser	Ala	Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala	835	840	845	
Asn	Ile	Gln	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly	850	855	860	
Val	Val	Glu	Ser	Met	Asn	Lys	Glu	Leu	Lys	Lys	Ile	Ile	Gly	Gln	Val	865	870	875	880
Arg	Glu	Gln	Ala	Glu	His	Leu	Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe	885	890	895	
Ile	His	Asn	Phe	Lys	Arg	Lys	Gly	Gly	Ile	Gly	Gly	Tyr	Ser	Ala	Gly	900	905	910	
Glu	Arg	Ile	Ile	Asp	Ile	Ile	Ala	Thr	Asp	Ile	Gln	Thr	Lys	Glu	Leu	915	920	925	
Gln	Lys	Gln	Ile	Thr	Lys	Ile	Gln	Asn	Phe	Arg	Val	Tyr	Tyr	Arg	Asp	930	935	940	
Ser	Arg	Asp	Pro	Ile	Trp	Lys	Gly	Pro	Ala	Lys	Leu	Leu	Trp	Lys	Gly	945	950	955	960
Glu	Gly	Ala	Val	Val	Ile	Gln	Asp	Asn	Ser	Asp	Ile	Lys	Val	Val	Pro	965	970	975	
Arg	Arg	Lys	Ala	Lys	Ile	Ile	Arg	Asp	Tyr	Gly	Lys	Gln	Met	Ala	Gly	980	985	990	
Asp	Asp	Cys	Val	Ala	Gly	Arg	Gln	Asp	Glu	Asp	995	1000							

<210> 221
 <211> 3012
 <212> DNA
 <213> Human immunodeficiency virus

<400> 221

ttcttccgcg	agaacctggc	cttccagcag	ggcgaggccc	gcaagttctc	ctccgagcag	60
acccgcgcc	actccccac	ctcccgcgag	ctgtgggacg	gcggccgcga	ctccctgctg	120
tccgaggccg	gcgcgagcgc	ccagggcacc	gtgccctcct	tctccttccc	ccagatcacc	180
ctgtggcagc	gccccctggt	gaccgtgaag	atcggcggcc	agctgaagga	ggccctgctg	240
gacaccggcg	ccgacgacac	cgtgctggag	gacatcaacc	tgcccgcaa	gtggaagccc	300
aagatgatcg	gcggcatcgg	cggcttcac	aagggtgcgc	agtacgacca	gacctgatc	360
gagatctgcg	gcaagaaggc	catcggcacc	gtgctggtgg	gccccacccc	cgtgaacatc	420
atcggccgca	acatgctgac	ccagatcggc	tgcacctga	acttccccat	ctcccccatc	480
gagaccgtgc	ccgtgaagct	gaagcccggc	atggacggcc	ccaaggtgaa	gcagtggccc	540
ctgaccgagg	agaagatcaa	ggccctgacc	gagatctgca	ccgagatgga	gaaggagggc	600
aagatctcca	agatcggccc	cgagaacccc	tacaacaccc	ccgtgttcgc	catcaagaag	660
aaggactcca	ccaagtggcg	caagctggtg	gacttccgcg	agctgaacaa	gcgcacccag	720
gacttctggg	aggtgcagct	gggcatcccc	caccccgccg	gcctgaagaa	gaagaagtcc	780
gtgaccgtgc	tggacgtggg	cgacgcctac	ttctccgtgc	ccctggacga	gtccttccgc	840
aagtacaccg	ccttcacat	cccctccatc	aacaacgaga	cccccgcat	ccgtaccag	900
tacaacgtgc	tgccccaggg	ctggaagggc	tccccgcga	tcttccagtc	ctccatgacc	960
aagatcctgg	agcccttccg	ctccaagaac	cccagatcgc	tgatctacca	gtacatggac	1020
gacctgtacg	tgggctccga	cctggagatc	ggccagcacc	gcgccaagat	cgaggagctg	1080
cgcgccacc	tgctgtcctg	gggcttcacc	accccgaca	agaagcacca	gaaggagccc	1140
cccttccgtg	ggatgggcta	cgagctgcac	ccgcacaagt	ggaccgtgca	gcccatacaag	1200
ctgcccgcga	aggactcctg	gaccgtgaac	gacatccaga	agctggtggg	caagctgaac	1260
tgggcctccc	agatctacgc	cggcatcaag	gtgaagcagc	tgtgcaagct	gctgcgcggc	1320
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aaccgcgaga	tcctgaagga	ccccgtgcac	ggcgtgtact	acgaccctc	caaggacctg	1440
gtggccgcga	tccagaagca	gggccaggac	cagtggacct	accagatcta	ccaggagccc	1500
ttcaagaacc	tgaagaccgg	caagtacgcc	aagaagcgct	ccgcccacac	caacgacgtg	1560
aagcagctga	ccgaggtggt	gcagaaggtg	gccaccgagt	ccatcgtgat	ctggggcaag	1620
acccccaa	tccgcctgcc	catccagaag	gagacctggg	agacctggtg	gatggagtac	1680
tggcaggcca	cctggatccc	cgagtgggag	ttcgtgaaca	ccccccccct	ggtgaagctg	1740
tgggtaccagc	tggagaagga	gcccatacgcc	ggcgccgcga	ccttctacgt	ggacggcgcc	1800
gccaaccgcg	agaccaagct	gggcaaggcc	ggctacgtga	ccgaccgcgg	ccgccagaag	1860
gtggtgtccc	tgaccgagac	caccaaccag	aagaccgagc	tgcacgccat	ccacctggcc	1920
ctgcaggact	ccggctccga	ggtgaacatc	gtgaccgact	cccagtagc	cctgggcac	1980
atccaggccc	agcccgaccg	ctccgagtcc	gagctggtga	accagatcat	cgagaagctg	2040
atcgagaagg	agaaggtgta	cctgtcctgg	gtgcccgcgc	acaagggcat	cggcggcaac	2100
gagcaggtgg	acaagctggt	gtcctccggc	atccgcaagg	tgctgttcc	ggacggcatc	2160
gacaaggccc	aggaggagca	cgagaagtac	cactccaact	ggcgcccat	ggcctccgac	2220
ttcaacctgc	ccccatcgt	ggccaaggag	atcgtggcct	cctgcgacaa	gtgccagctg	2280
aagggcgagg	ccatgcacgg	ccaggtggac	tgctcccccg	gcactctggca	gctggactgc	2340
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gccgaggtga	tccccgcga	gaccggccag	gagaccgcct	acttctctgt	gaagctggcc	2460
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gtgaaggccg	cctgctggtg	ggccaacatc	cagcaggagt	tcggcatccc	ctacaacccc	2580
cagtcccagg	gcgtggtgga	gtccatgaac	aaggagctga	agaagatcat	cggccagggtg	2640
cgcgagcagg	ccgagcacct	gaagaccgcc	gtgcagatgg	ccgtgttcat	ccacaacttc	2700
aagcgcaagg	gcggcatcgg	cggctactcc	gccggcgagc	gcactcatcga	catcatcgcc	2760
accgacatcc	agaccaagga	gctgcagaag	cagatcacca	agatccagaa	cttccgcgtg	2820
tactaccgcg	actccgcgca	ccccatctgg	aaggggccccg	ccaagctgct	gtggaagggc	2880
gagggcgcgcg	tggatgacca	ggacaactcc	gacatcaagg	tgggtgccccg	ccgcaaggcc	2940

aagatcatcc gcgactacgg caagcagatg gccggcgacg actgcgtggc cggccgccag 3000
gacgaggact aa 3012

<210> 222

<211> 1003

<212> PRT

<213> Human immunodeficiency virus

<400> 222

Phe Phe Arg Glu Asn Leu Ala Phe Gln Gln Arg Glu Ala Arg Lys Phe
1 5 10 15

Ser Ser Glu Gln Asn Arg Ala Asn Ser Pro Thr Ser Arg Glu Leu Arg
20 25 30

Asn Gly Gly Arg Asp Asn Leu Leu Ser Glu Ala Gly Ala Glu Glu Gln
35 40 45

Gly Thr Val His Ser Cys Asn Phe Pro Gln Ile Thr Leu Trp Gln Arg
50 55 60

Pro Leu Val Thr Val Lys Ile Glu Gly Gln Leu Arg Glu Ala Leu Leu
65 70 75 80

Asp Thr Gly Ala Asp Asp Thr Val Leu Glu Asp Ile Asn Leu Pro Gly
85 90 95

Lys Trp Lys Pro Lys Met Ile Gly Gly Ile Gly Gly Phe Ile Lys Val
100 105 110

Arg Gln Tyr Asp Gln Ile Ala Ile Glu Ile Cys Gly Lys Arg Ala Ile
115 120 125

Gly Thr Val Leu Val Gly Pro Thr Pro Val Asn Ile Ile Gly Arg Asn
130 135 140

Met Leu Val Gln Leu Gly Cys Thr Leu Asn Phe Pro Ile Ser Pro Ile
145 150 155 160

Glu Thr Val Pro Val Lys Leu Lys Pro Gly Met Asp Gly Pro Lys Val
165 170 175

Lys Gln Trp Pro Leu Thr Glu Glu Lys Ile Lys Ala Leu Thr Glu Ile
180 185 190

Cys Lys Glu Met Glu Lys Glu Gly Lys Ile Ser Lys Ile Gly Pro Glu
195 200 205

Asn Pro Tyr Asn Thr Pro Val Phe Ala Ile Lys Lys Lys Asp Ser Thr
210 215 220

Lys Trp Arg Lys Leu Val Asp Phe Arg Glu Leu Asn Lys Arg Thr Gln
225 230 235 240

Asp Phe Trp Glu Val Gln Leu Gly Ile Pro His Pro Ala Gly Leu Lys
245 250 255

Lys	Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	
			260					265					270			
Val	Pro	Leu	His	Glu	Asp	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	
		275					280					285				
Ser	Ile	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	
	290					295					300					
Pro	Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	
305					310					315					320	
Lys	Ile	Leu	Glu	Pro	Phe	Arg	Ser	Lys	Asn	Pro	Glu	Met	Val	Ile	Tyr	
				325					330					335		
Gln	Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	
			340					345					350			
His	Arg	Ala	Lys	Ile	Glu	Glu	Leu	Arg	Ala	His	Leu	Leu	Arg	Trp	Gly	
		355					360					365				
Phe	Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	
	370					375					380					
Met	Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Lys	
385					390					395					400	
Leu	Pro	Glu	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	
				405					410					415		
Gly	Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Ala	Gly	Ile	Lys	Val	Lys	
			420					425					430			
Gln	Leu	Cys	Lys	Leu	Leu	Arg	Gly	Thr	Lys	Ala	Leu	Thr	Asp	Ile	Val	
		435					440					445				
Thr	Leu	Thr	Lys	Glu	Ala	Glu	Leu	Glu	Leu	Glu	Glu	Asn	Arg	Glu	Ile	
	450					455					460					
Leu	Lys	Asn	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	
465					470					475					480	
Ile	Ala	Glu	Ile	Gln	Lys	Gln	Gly	Gln	Asp	Gln	Trp	Thr	Tyr	Gln	Ile	
				485					490					495		
Tyr	Gln	Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Lys	Arg	
			500					505					510			
Lys	Ser	Thr	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Ala	Val	Gln	
		515					520					525				
Lys	Ile	Ala	Ile	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	
	530					535					540					
Arg	Leu	Pro	Ile	Gln	Lys	Glu	Thr	Trp	Glu	Thr	Trp	Trp	Thr	Glu	Tyr	
545					550					555					560	

Trp	Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	565	570	575
Leu	Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Thr	Glu	Pro	Ile	Ala	Gly	Ala	580	585	590
Glu	Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Leu	Gly	595	600	605
Lys	Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Ile	Val	Ser	Leu	610	615	620
Thr	Glu	Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	His	Ala	Ile	Tyr	Leu	Ala	625	630	635
Leu	Gln	Asp	Ser	Gly	Leu	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	645	650	655
Ala	Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Arg	Ser	Glu	Ser	Glu	Leu	660	665	670
Val	Asn	Gln	Ile	Ile	Glu	Lys	Leu	Ile	Glu	Lys	Glu	Arg	Val	Tyr	Leu	675	680	685
Ser	Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	690	695	700
Lys	Leu	Val	Ser	Ser	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	705	710	715
Asp	Lys	Ala	Gln	Glu	Glu	His	Glu	Arg	Tyr	His	Ser	Asn	Trp	Arg	Ala	725	730	735
Met	Ala	His	Asp	Phe	Asn	Leu	Pro	Pro	Ile	Val	Ala	Lys	Glu	Ile	Val	740	745	750
Ala	Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	755	760	765
Val	Asp	Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	770	775	780
Gly	Lys	Val	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	785	790	795
Ala	Glu	Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Ile	805	810	815
Leu	Lys	Leu	Ala	Gly	Arg	Trp	Pro	Val	Lys	Val	Ile	His	Thr	Asp	Asn	820	825	830
Gly	Pro	Asn	Phe	Thr	Ser	Ala	Thr	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala	835	840	845
Gly	Val	Gln	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly	850	855	860

Val Val Glu Ser Met Asn Lys Glu Leu Lys Lys Ile Ile Gly Gln Val
 865 870 875 880
 Arg Asp Gln Ala Glu His Leu Lys Thr Ala Val Gln Met Ala Val Phe
 885 890 895
 Ile His Asn Phe Lys Arg Lys Gly Gly Ile Gly Gly Tyr Ser Ala Gly
 900 905 910
 Glu Arg Ile Ile Asp Ile Ile Ala Thr Asp Ile Gln Thr Lys Glu Leu
 915 920 925
 Gln Lys Gln Ile Ile Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg Asp
 930 935 940
 Ser Arg Asp Pro Ile Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly
 945 950 955 960
 Glu Gly Ala Val Val Ile Gln Asp Asn Ser Asp Ile Lys Val Val Pro
 965 970 975
 Arg Arg Lys Ala Lys Ile Ile Arg Asp Tyr Gly Lys Gln Met Ala Gly
 980 985 990
 Asp Asp Cys Val Ala Gly Arg Gln Asp Glu Asp
 995 1000

<210> 223
 <211> 1003
 <212> PRT
 <213> Human immunodeficiency virus

<400> 223
 Phe Phe Arg Glu Asp Leu Ala Phe Pro Gln Gly Lys Ala Arg Glu Phe
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 Ser Ser Glu Gln Thr Arg Ala Asn Ser Pro Thr Arg Arg Glu Leu Gln
 20 25 30
 Val Trp Gly Arg Asp Asn Asn Ser Leu Ser Glu Ala Gly Ala Asp Arg
 35 40 45
 Gln Gly Thr Val Ser Phe Ser Phe Pro Gln Ile Thr Leu Trp Gln Arg
 50 55 60
 Pro Leu Val Thr Ile Lys Ile Gly Gly Gln Leu Lys Glu Ala Leu Leu
 65 70 75 80
 Asp Thr Gly Ala Asp Asp Thr Val Leu Glu Glu Met Asn Leu Pro Gly
 85 90 95
 Arg Trp Lys Pro Lys Met Ile Gly Gly Ile Gly Gly Phe Ile Lys Val
 100 105 110
 Arg Gln Tyr Asp Gln Ile Leu Ile Glu Ile Cys Gly His Lys Ala Ile

115					120					125					
Gly	Thr	Val	Leu	Val	Gly	Pro	Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn
130					135					140					
Leu	Leu	Thr	Gln	Ile	Gly	Cys	Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile
145					150					155					160
Glu	Thr	Val	Pro	Val	Lys	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val
				165					170					175	
Lys	Gln	Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Val	Glu	Ile
			180					185					190		
Cys	Thr	Glu	Met	Glu	Lys	Glu	Gly	Lys	Ile	Ser	Lys	Ile	Gly	Pro	Glu
		195					200					205			
Asn	Pro	Tyr	Asn	Thr	Pro	Val	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr
		210					215					220			
Lys	Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln
225				230						235					240
Asp	Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys
			245						250					255	
Lys	Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser
			260					265					270		
Val	Pro	Leu	Asp	Lys	Asp	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro
		275					280					285			
Ser	Ile	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu
		290					295				300				
Pro	Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr
305				310						315					320
Lys	Ile	Leu	Glu	Pro	Phe	Arg	Lys	Gln	Asn	Pro	Asp	Ile	Val	Ile	Tyr
			325						330					335	
Gln	Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln
		340						345					350		
His	Arg	Thr	Lys	Ile	Glu	Glu	Leu	Arg	Gln	His	Leu	Leu	Arg	Trp	Gly
		355					360					365			
Phe	Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp
		370					375				380				
Met	Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Val
385				390					395						400
Leu	Pro	Glu	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val
			405					410					415		
Gly	Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Ala	Gly	Ile	Lys	Val	Lys

420							425					430				
Gln	Leu	Cys	Lys	Leu	Leu	Arg	Gly	Thr	Lys	Ala	Leu	Thr	Glu	Val	Ile	
		435					440					445				
Pro	Leu	Thr	Glu	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	
		450					455					460				
Leu	Lys	Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	
465					470					475						
Ile	Ala	Glu	Ile	Gln	Lys	Gln	Gly	Gln	Gly	Gln	Trp	Thr	Tyr	Gln	Ile	
				485							490			495		
Tyr	Gln	Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Arg	Met	
				500					505					510		
Arg	Gly	Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Ala	Val	Gln	
				515			520					525				
Lys	Ile	Ala	Thr	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	
				530			535					540				
Lys	Leu	Pro	Ile	Gln	Lys	Glu	Thr	Trp	Glu	Ala	Trp	Trp	Thr	Glu	Tyr	
545					550					555						
Trp	Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	
				565					570					575		
Leu	Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Lys	Glu	Pro	Ile	Val	Gly	Ala	
				580					585					590		
Glu	Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Leu	Gly	
				595			600					605				
Lys	Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Val	Val	Ser	Leu	
				610			615					620				
Thr	Asp	Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	Gln	Ala	Ile	His	Leu	Ala	
625					630					635						
Leu	Gln	Asp	Ser	Gly	Leu	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	
				645					650					655		
Ala	Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Lys	Ser	Glu	Ser	Glu	Leu	
				660					665					670		
Val	Ser	Gln	Ile	Ile	Glu	Gln	Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu	
				675			680					685				
Ala	Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	
				690			695					700				
Lys	Leu	Val	Ser	Ala	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	
705					710					715						
Asp	Lys	Ala	Gln	Glu	Glu	His	Glu	Lys	Tyr	His	Ser	Asn	Trp	Arg	Ala	

725					730					735					
Met	Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Val	Val	Ala	Lys	Glu	Ile	Val
			740					745					750		
Ala	Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln
		755					760					765			
Val	Asp	Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu
	770					775					780				
Gly	Lys	Ile	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu
785						790					795				800
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Arg	Asp	Gln	Ala	Glu	His	Leu	Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe
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<210> 224
 <211> 3012
 <212> DNA

<213> Human immunodeficiency virus

<400> 224

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<210> 225

<211> 3012
<212> DNA
<213> Human immunodeficiency virus

<400> 225

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<210> 226
<211> 1003
<212> PRT
<213> Human immunodeficiency virus

<400> 226

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Val	Trp	Gly	Arg	Asp	Asn	Asn	Pro	Leu	Ser	Glu	Ala	Gly	Ala	Asp	Arg
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Gln	Gly	Thr	Val	Ser	Phe	Ser	Phe	Pro	Gln	Ile	Thr	Leu	Trp	Gln	Arg
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Pro	Leu	Val	Thr	Ile	Lys	Ile	Gly	Gly	Gln	Leu	Lys	Glu	Ala	Leu	Leu
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Asp	Thr	Gly	Ala	Asp	Asp	Thr	Val	Leu	Glu	Glu	Met	Asn	Leu	Pro	Gly
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Lys	Trp	Lys	Pro	Lys	Met	Ile	Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys	Val
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Gly	Thr	Val	Leu	Val	Gly	Pro	Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn
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Lys	Gln	Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Val	Glu	Ile
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Cys	Thr	Glu	Met	Glu	Lys	Glu	Gly	Lys	Ile	Ser	Lys	Ile	Gly	Pro	Glu
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Asp	Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys
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Gln	Leu	Cys	Lys	Leu	Leu	Arg	Gly	Thr	Lys	Ala	Leu	Thr	Glu	Val	Val	435	440	445
Pro	Leu	Thr	Glu	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	450	455	460
Leu	Lys	Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	465	470	475
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<210> 227

<211> 3012

<212> DNA

<213> Human immunodeficiency virus

<400> 227

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<210> 228

<211> 999

<212> PRT

<213> Human immunodeficiency virus

<400> 228

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Phe Phe Arg Glu Asn Leu Ala Phe Pro Gln Gly Glu Ala Arg Glu Phe
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          20             25             30

Val Arg Gly Asp Asn Pro Arg Ser Glu Ala Gly Ala Glu Arg Gln Gly
          35             40             45

Thr Leu Asn Phe Pro Gln Ile Thr Leu Trp Gln Arg Pro Leu Val Ser
          50             55             60

Ile Lys Val Gly Gly Gln Ile Lys Glu Ala Leu Leu Asp Thr Gly Ala
          65             70             75             80

Asp Asp Thr Val Leu Glu Glu Ile Asn Leu Pro Gly Lys Trp Lys Pro
          85             90             95

Lys Met Ile Gly Gly Ile Gly Gly Phe Ile Lys Val Arg Gln Tyr Asp
          100            105            110

Gln Ile Leu Ile Glu Ile Cys Gly Lys Lys Ala Ile Gly Thr Val Leu
          115            120            125

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Val	Gly	Pro	Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn	Met	Leu	Thr	Gln	130	135	140	
Leu	Gly	Cys	Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile	Glu	Thr	Val	Pro	145	150	155	160
Val	Lys	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val	Lys	Gln	Trp	Pro	165	170	175	
Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Ala	Ile	Cys	Glu	Glu	Met	180	185	190	
Glu	Lys	Glu	Gly	Lys	Ile	Thr	Lys	Ile	Gly	Pro	Glu	Asn	Pro	Tyr	Asn	195	200	205	
Thr	Pro	Val	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	Lys	Trp	Arg	Lys	210	215	220	
Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	Asp	Phe	Trp	Glu	225	230	235	240
Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	Lys	Lys	Lys	Ser	245	250	255	
Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	Val	Pro	Leu	Asp	260	265	270	
Glu	Gly	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser	Ile	Asn	Asn	275	280	285	
Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	Pro	Gln	Gly	Trp	290	295	300	
Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	Lys	Ile	Leu	Glu	305	310	315	320
Pro	Phe	Arg	Ala	Gln	Asn	Pro	Glu	Ile	Val	Ile	Tyr	Gln	Tyr	Met	Asp	325	330	335	
Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	His	Arg	Ala	Lys	340	345	350	
Ile	Glu	Glu	Leu	Arg	Glu	His	Leu	Leu	Lys	Trp	Gly	Phe	Thr	Thr	Pro	355	360	365	
Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	Met	Gly	Tyr	Glu	370	375	380	
Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Gln	Leu	Pro	Glu	Lys	385	390	395	400
Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	Gly	Lys	Leu	Asn	405	410	415	
Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Arg	Gln	Leu	Cys	Lys	420	425	430	

Leu Leu Arg Gly Ala Lys Ala Leu Thr Asp Ile Val Pro Leu Thr Glu
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 Glu Ala Glu Leu Glu Leu Ala Glu Asn Arg Glu Ile Leu Lys Glu Pro
 450 455 460
 Val His Gly Val Tyr Tyr Asp Pro Ser Lys Asp Leu Ile Ala Glu Ile
 465 470 475 480
 Gln Lys Gln Gly His Asp Gln Trp Thr Tyr Gln Ile Tyr Gln Glu Pro
 485 490 495
 Phe Lys Asn Leu Lys Thr Gly Lys Tyr Ala Lys Met Arg Thr Ala His
 500 505 510
 Thr Asn Asp Val Lys Gln Leu Thr Glu Ala Val Gln Lys Ile Ala Met
 515 520 525
 Glu Ser Ile Val Ile Trp Gly Lys Thr Pro Lys Phe Arg Leu Pro Ile
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 Gln Lys Glu Thr Trp Glu Thr Trp Trp Thr Asp Tyr Trp Gln Ala Thr
 545 550 555 560
 Trp Ile Pro Glu Trp Glu Phe Val Asn Thr Pro Pro Leu Val Lys Leu
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 Trp Tyr Gln Leu Glu Lys Glu Pro Ile Ala Gly Ala Glu Thr Phe Tyr
 580 585 590
 Val Asp Gly Ala Ala Asn Arg Glu Thr Lys Ile Gly Lys Ala Gly Tyr
 595 600 605
 Val Thr Asp Arg Gly Arg Gln Lys Ile Val Ser Leu Thr Glu Thr Thr
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 Asn Gln Lys Thr Glu Leu Gln Ala Ile Gln Leu Ala Leu Gln Asp Ser
 625 630 635 640
 Gly Ser Glu Val Asn Ile Val Thr Asp Ser Gln Tyr Ala Leu Gly Ile
 645 650 655
 Ile Gln Ala Gln Pro Asp Lys Ser Glu Ser Glu Leu Val Asn Gln Ile
 660 665 670
 Ile Glu Gln Leu Ile Lys Lys Glu Arg Val Tyr Leu Ser Trp Val Pro
 675 680 685
 Ala His Lys Gly Ile Gly Gly Asn Glu Gln Val Asp Lys Leu Val Ser
 690 695 700
 Ser Gly Ile Arg Lys Val Leu Phe Leu Asp Gly Ile Asp Lys Ala Gln
 705 710 715 720
 Glu Glu His Glu Lys Tyr His Ser Asn Trp Arg Ala Met Ala Ser Glu
 725 730 735

Phe Asn Leu Pro Pro Ile Val Ala Lys Glu Ile Val Ala Ser Cys Asp
740 745 750
Lys Cys Gln Leu Lys Gly Glu Ala Ile His Gly Gln Val Asp Cys Ser
755 760 765
Pro Gly Ile Trp Gln Leu Asp Cys Thr His Leu Glu Gly Lys Ile Ile
770 775 780
Leu Val Ala Val His Val Ala Ser Gly Tyr Ile Glu Ala Glu Val Ile
785 790 795 800
Pro Ala Glu Thr Gly Gln Glu Thr Ala Tyr Tyr Ile Leu Lys Leu Ala
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Gly Arg Trp Pro Val Lys Val Ile His Thr Asp Asn Gly Ser Asn Phe
820 825 830
Thr Ser Ala Ala Val Lys Ala Ala Cys Trp Trp Ala Gly Ile Gln Gln
835 840 845
Glu Phe Gly Ile Pro Tyr Asn Pro Gln Ser Gln Gly Val Val Glu Ser
850 855 860
Met Asn Lys Glu Leu Lys Lys Ile Ile Gly Gln Val Arg Asp Gln Ala
865 870 875 880
Glu His Leu Lys Thr Ala Val Gln Met Ala Val Phe Ile His Asn Phe
885 890 895
Lys Arg Lys Gly Gly Ile Gly Gly Tyr Ser Ala Gly Glu Arg Ile Ile
900 905 910
Asp Ile Ile Ala Thr Asp Ile Gln Thr Lys Glu Leu Gln Lys Gln Ile
915 920 925
Ile Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg Asp Ser Arg Asp Pro
930 935 940
Ile Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly Glu Gly Ala Val
945 950 955 960
Val Ile Gln Asp Asn Ser Asp Ile Lys Val Val Pro Arg Arg Lys Ala
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Lys Ile Ile Lys Asp Tyr Gly Lys Gln Met Ala Gly Ala Asp Cys Val
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Ala Gly Arg Gln Asp Glu Asp
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<210> 229

<211> 3000

<212> DNA

<213> Human immunodeficiency virus

<400> 229

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<210> 230

<211> 1001

<212> PRT

<213> Human immunodeficiency virus

<400> 230

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Pro	Ser	Glu	Gln	Thr	Arg	Ala	Asn	Ser	Pro	Thr	Ser	Arg	Glu	Leu	Gln
			20					25					30		
Val	Gly	Arg	Asp	Asn	Pro	Arg	Ser	Glu	Ala	Gly	Ala	Glu	Arg	Gln	Gly
		35					40					45			
Thr	Leu	Thr	Leu	Asn	Phe	Pro	Gln	Ile	Thr	Leu	Trp	Gln	Arg	Pro	Leu
	50					55					60				
Val	Ser	Ile	Lys	Val	Gly	Gly	Gln	Ile	Lys	Glu	Ala	Leu	Leu	Asp	Thr
65					70					75					80
Gly	Ala	Asp	Asp	Thr	Val	Leu	Glu	Glu	Ile	Asn	Leu	Pro	Gly	Lys	Trp
				85					90					95	
Lys	Pro	Lys	Met	Ile	Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys	Val	Arg	Gln
			100					105					110		
Tyr	Asp	Gln	Ile	Leu	Ile	Glu	Ile	Cys	Gly	Lys	Lys	Ala	Ile	Gly	Thr
		115					120					125			
Val	Leu	Val	Gly	Pro	Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn	Met	Leu
	130					135					140				
Thr	Gln	Leu	Gly	Cys	Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile	Glu	Thr
145					150					155					160
Val	Pro	Val	Lys	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val	Lys	Gln
				165					170					175	
Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Ala	Ile	Cys	Glu
			180					185					190		
Glu	Met	Glu	Lys	Glu	Gly	Lys	Ile	Thr	Lys	Ile	Gly	Pro	Glu	Asn	Pro
		195					200					205			
Tyr	Asn	Thr	Pro	Val	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	Lys	Trp
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Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	Asp	Phe
225					230					235					240
Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	Lys	Lys
				245					250					255	
Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	Val	Pro
			260					265					270		
Leu	Asp	Glu	Gly	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser	Ile
		275					280					285			

Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	Pro	Gln	290	295	300	
Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	Lys	Ile	305	310	315	320
Leu	Glu	Pro	Phe	Arg	Ala	Gln	Asn	Pro	Glu	Ile	Val	Ile	Tyr	Gln	Tyr		325	330	335
Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	His	Arg	340		345	350
Ala	Lys	Ile	Glu	Glu	Leu	Arg	Glu	His	Leu	Leu	Lys	Trp	Gly	Phe	Thr	355		360	365
Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	Met	Gly	370	375		380
Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Gln	Leu	Pro	385	390	395	400
Glu	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	Gly	Lys		405	410	415
Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Arg	Gln	Leu		420	425	430
Cys	Lys	Leu	Leu	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Ile	Val	Pro	Leu	435		440	445
Thr	Glu	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	Leu	Lys	450	455		460
Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	Ile	Ala	465	470	475	480
Glu	Ile	Gln	Lys	Gln	Gly	His	Asp	Gln	Trp	Thr	Tyr	Gln	Ile	Tyr	Gln		485	490	495
Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Lys	Met	Arg	Thr		500	505	510
Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Ala	Val	Gln	Lys	Ile	515		520	525
Ala	Met	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	Arg	Leu	530	535		540
Pro	Ile	Gln	Lys	Glu	Thr	Trp	Glu	Thr	Trp	Trp	Thr	Asp	Tyr	Trp	Gln	545	550	555	560
Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	Leu	Val		565	570	575
Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Lys	Glu	Pro	Ile	Ala	Gly	Ala	Glu	Thr		580	585	590

Phe	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Ile	Gly	Lys	Ala		
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Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Ile	Val	Ser	Leu	Thr	Glu		
	610					615					620						
Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	Gln	Ala	Ile	Gln	Leu	Ala	Leu	Gln		
625					630					635					640		
Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	Ala	Leu		
				645					650					655			
Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Lys	Ser	Glu	Ser	Glu	Leu	Val	Asn		
			660					665					670				
Gln	Ile	Ile	Glu	Gln	Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu	Ser	Trp		
			675				680					685					
Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	Lys	Leu		
	690					695					700						
Val	Ser	Ser	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	Asp	Lys		
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Ala	Gln	Glu	Glu	His	Glu	Lys	Tyr	His	Ser	Asn	Trp	Arg	Ala	Met	Ala		
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Ser	Glu	Phe	Asn	Leu	Pro	Pro	Ile	Val	Ala	Lys	Glu	Ile	Val	Ala	Ser		
			740					745					750				
Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	Val	Asp		
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Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	Gly	Lys		
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Ile	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	Ala	Glu		
785					790				795						800		
Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Ile	Leu	Lys		
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Leu	Ala	Gly	Arg	Trp	Pro	Val	Lys	Val	Ile	His	Thr	Asp	Asn	Gly	Ser		
			820					825					830				
Asn	Phe	Thr	Ser	Ala	Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala	Gly	Ile		
	835						840					845					
Gln	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly	Val	Val		
	850					855					860						
Glu	Ser	Met	Asn	Lys	Glu	Leu	Lys	Lys	Ile	Ile	Gly	Gln	Val	Arg	Asp		
865					870				875					880			
Gln	Ala	Glu	His	Leu	Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe	Ile	His		
				885					890					895			

Asn Phe Lys Arg Lys Gly Gly Ile Gly Gly Tyr Ser Ala Gly Glu Arg
900 905 910

Ile Ile Asp Ile Ile Ala Thr Asp Ile Gln Thr Lys Glu Leu Gln Lys
915 920 925

Gln Ile Ile Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg Asp Ser Arg
930 935 940

Asp Pro Ile Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly Glu Gly
945 950 955 960

Ala Val Val Ile Gln Asp Asn Ser Asp Ile Lys Val Val Pro Arg Arg
965 970 975

Lys Ala Lys Ile Ile Arg Asp Tyr Gly Lys Gln Met Ala Gly Ala Asp
980 985 990

Cys Val Ala Gly Arg Gln Asp Glu Asp
995 1000

<210> 231

<211> 3006

<212> DNA

<213> Human immunodeficiency virus

<400> 231

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aagttccgcc tgcccatcca gaaggagacc tgggagacct ggtggaccga ctactggcag 1680
gccacctgga tccccgagtg ggagttcgtg aacaccccc ccctggtgaa gctgtggtac 1740

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tccctgaccg agaccaccaa ccagaagacc gagctgcagg ccatccagct ggccctgcag 1920
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gccagccccg acaagtccga gtccgagctg gtgaaccaga tcatcgagca gctgatcaag 2040
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gactaa 3006

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<210> 232

<211> 1002

<212> PRT

<213> Human immunodeficiency virus

<400> 232

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Phe Phe Arg Glu Asn Leu Ala Phe Pro Gln Gly Lys Ala Gly Glu Leu
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Ser Ser Glu Gln Thr Arg Ala Asn Ser Pro Thr Ser Arg Glu Leu Arg
      20              25              30

Val Trp Gly Gly Asp Asn Pro Leu Ser Glu Thr Gly Ala Glu Arg Gln
      35              40              45

Gly Thr Val Ser Phe Asn Phe Pro Gln Ile Thr Leu Trp Gln Arg Pro
      50              55              60

Leu Val Thr Ile Lys Ile Gly Gly Gln Leu Lys Glu Ala Leu Leu Asp
      65              70              75              80

Thr Gly Ala Asp Asp Thr Val Leu Glu Glu Ile Asn Leu Pro Gly Lys
      85              90              95

Trp Lys Pro Lys Met Ile Gly Gly Ile Gly Gly Phe Ile Lys Val Arg
      100             105             110

Gln Tyr Asp Gln Ile Leu Ile Glu Ile Cys Gly His Lys Ala Ile Gly
      115             120             125

Thr Val Leu Val Gly Pro Thr Pro Val Asn Ile Ile Gly Arg Asn Leu
      130             135             140

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Leu	Thr	Gln	Ile	Gly	Cys	Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile	Glu	145	150	155	160
Thr	Val	Pro	Val	Lys	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val	Lys	165	170	175	
Gln	Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Glu	Ile	Cys	180	185	190	
Thr	Glu	Met	Glu	Lys	Glu	Gly	Lys	Ile	Ser	Arg	Ile	Gly	Pro	Glu	Asn	195	200	205	
Pro	Tyr	Asn	Thr	Pro	Ile	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	Lys	210	215	220	
Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	Asp	225	230	235	240
Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	Lys	245	250	255	
Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	Val	260	265	270	
Pro	Leu	Asp	Glu	Asp	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser	275	280	285	
Ile	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	Pro	290	295	300	
Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	Lys	305	310	315	320
Ile	Leu	Glu	Pro	Phe	Arg	Lys	Gln	Asn	Pro	Glu	Ile	Val	Ile	Tyr	Gln	325	330	335	
Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	His	340	345	350	
Arg	Thr	Lys	Ile	Glu	Glu	Leu	Arg	Glu	His	Leu	Leu	Arg	Trp	Gly	Phe	355	360	365	
Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	Met	370	375	380	
Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Lys	Leu	385	390	395	400
Pro	Glu	Lys	Glu	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	Gly	405	410	415	
Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Arg	Gln	420	425	430	
Leu	Cys	Lys	Leu	Leu	Arg	Gly	Thr	Lys	Ala	Leu	Thr	Glu	Val	Ile	Pro	435	440	445	

Leu Thr Glu Glu Ala Glu Leu Glu Leu Ala Glu Asn Arg Glu Ile Leu
 450 455 460

Lys Glu Pro Val His Gly Val Tyr Tyr Asp Pro Ser Lys Asp Leu Ile
 465 470 475 480

Ala Glu Ile Gln Lys Gln Gly Gln Gly Gln Trp Thr Tyr Gln Ile Tyr
 485 490 495

Gln Glu Pro Phe Lys Asn Leu Lys Thr Gly Lys Tyr Ala Arg Met Arg
 500 505 510

Gly Ala His Thr Asn Asp Val Lys Gln Leu Thr Glu Ala Val Gln Lys
 515 520 525

Ile Ala Ile Glu Ser Ile Val Ile Trp Gly Lys Thr Pro Lys Phe Arg
 530 535 540

Leu Pro Ile Gln Lys Glu Thr Trp Glu Thr Trp Trp Thr Glu Tyr Trp
 545 550 555 560

Gln Ala Thr Trp Ile Pro Glu Trp Glu Phe Val Asn Thr Pro Pro Leu
 565 570 575

Val Lys Leu Trp Tyr Gln Leu Glu Lys Glu Pro Ile Ile Gly Ala Glu
 580 585 590

Thr Phe Tyr Val Asp Gly Ala Ala Asn Arg Glu Thr Lys Leu Gly Lys
 595 600 605

Ala Gly Tyr Val Thr Asp Arg Gly Arg Gln Lys Val Val Pro Leu Thr
 610 615 620

Asp Thr Thr Asn Gln Lys Thr Glu Leu Gln Ala Ile Asn Leu Ala Leu
 625 630 635 640

Gln Asp Ser Gly Leu Glu Val Asn Ile Val Thr Asp Ser Gln Tyr Ala
 645 650 655

Leu Gly Ile Ile Gln Ala Gln Pro Asp Lys Ser Glu Ser Glu Leu Val
 660 665 670

Ser Gln Ile Ile Glu Gln Leu Ile Lys Lys Glu Lys Val Tyr Leu Ala
 675 680 685

Trp Val Pro Ala His Lys Gly Ile Gly Gly Asn Glu Gln Val Asp Lys
 690 695 700

Leu Val Ser Asn Gly Ile Arg Lys Val Leu Phe Leu Asp Gly Ile Asp
 705 710 715 720

Lys Ala Gln Glu Glu His Glu Lys Tyr His Asn Asn Trp Arg Ala Met
 725 730 735

Ala Ser Asp Phe Asn Leu Pro Pro Val Val Ala Lys Glu Ile Val Ala
 740 745 750

Ser Cys Asp Lys Cys Gln Leu Lys Gly Glu Ala Met His Gly Gln Val
755 760 765

Asp Cys Ser Pro Gly Ile Trp Gln Leu Asp Cys Thr His Leu Glu Gly
770 775 780

Lys Val Ile Leu Val Ala Val His Val Ala Ser Gly Tyr Ile Glu Ala
785 790 795 800

Glu Val Ile Pro Ala Glu Thr Gly Gln Glu Thr Ala Tyr Phe Leu Leu
805 810 815

Lys Leu Ala Gly Arg Trp Pro Val Lys Val Val His Thr Asp Asn Gly
820 825 830

Ser Asn Phe Thr Ser Ala Ala Val Lys Ala Ala Cys Trp Trp Ala Gly
835 840 845

Ile Lys Gln Glu Phe Gly Ile Pro Tyr Asn Pro Gln Ser Gln Gly Val
850 855 860

Val Glu Ser Met Asn Lys Glu Leu Lys Lys Ile Ile Gly Gln Val Arg
865 870 875 880

Asp Gln Ala Glu His Leu Lys Thr Ala Val Gln Met Ala Val Phe Ile
885 890 895

His Asn Phe Lys Arg Lys Gly Gly Ile Gly Gly Tyr Ser Ala Gly Glu
900 905 910

Arg Ile Ile Asp Ile Ile Ala Thr Asp Ile Gln Thr Lys Glu Leu Gln
915 920 925

Lys Gln Ile Ile Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg Asp Ser
930 935 940

Arg Asp Pro Ile Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly Glu
945 950 955 960

Gly Ala Val Val Ile Gln Asp Asn Ser Asp Ile Lys Val Val Pro Arg
965 970 975

Arg Lys Val Lys Ile Ile Arg Asp Tyr Gly Lys Gln Met Ala Gly Asp
980 985 990

Asp Cys Val Ala Ser Arg Gln Asp Glu Asp
995 1000

<210> 233

<211> 1003

<212> PRT

<213> Human immunodeficiency virus

<400> 233

Phe Phe Arg Glu Asn Leu Ala Phe Gln Gln Gly Glu Ala Arg Lys Phe
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Pro	Ser	Glu	Gln	Thr	Arg	Ala	Asn	Ser	Pro	Ala	Ser	Arg	Glu	Leu	Arg	20	25	30
Val	Gln	Arg	Gly	Asp	Asn	Pro	Leu	Ser	Glu	Ala	Gly	Ala	Glu	Arg	Arg	35	40	45
Gly	Thr	Val	Pro	Ser	Leu	Ser	Phe	Pro	Gln	Ile	Thr	Leu	Trp	Gln	Arg	50	55	60
Pro	Leu	Val	Thr	Ile	Lys	Ile	Gly	Gly	Gln	Leu	Lys	Glu	Ala	Leu	Leu	65	70	75
Asp	Thr	Gly	Ala	Asp	Asp	Thr	Val	Leu	Glu	Asp	Ile	Asn	Leu	Pro	Gly	85	90	95
Lys	Trp	Lys	Pro	Lys	Met	Ile	Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys	Val	100	105	110
Lys	Gln	Tyr	Asp	His	Ile	Leu	Ile	Glu	Ile	Cys	Gly	His	Lys	Ala	Ile	115	120	125
Gly	Thr	Val	Leu	Val	Gly	Pro	Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn	130	135	140
Met	Leu	Thr	Gln	Ile	Gly	Cys	Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile	145	150	155
Glu	Thr	Val	Pro	Val	Lys	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val	165	170	175
Lys	Gln	Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Glu	Ile	180	185	190
Cys	Thr	Glu	Met	Glu	Lys	Glu	Gly	Lys	Ile	Ser	Lys	Ile	Gly	Pro	Glu	195	200	205
Asn	Pro	Tyr	Asn	Thr	Pro	Val	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	210	215	220
Lys	Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	225	230	235
Asp	Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	245	250	255
Lys	Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	260	265	270
Val	Pro	Leu	Asp	Lys	Asp	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	275	280	285
Ser	Val	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	290	295	300
Pro	Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Cys	Ser	Met	Thr	305	310	315

Lys	Ile	Leu	Glu	Pro	Phe	Arg	Thr	Lys	Asn	Pro	Asp	Ile	Val	Ile	Tyr	325	330	335
Gln	Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	340	345	350
His	Arg	Thr	Lys	Ile	Glu	Glu	Leu	Arg	Glu	His	Leu	Leu	Lys	Trp	Gly	355	360	365
Phe	Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	370	375	380
Met	Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Gln	385	390	395
Leu	Pro	Asp	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	405	410	415
Gly	Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Lys	420	425	430
Gln	Leu	Cys	Lys	Leu	Leu	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Ile	Val	435	440	445
Pro	Leu	Thr	Ala	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	450	455	460
Leu	Lys	Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	465	470	475
Ile	Ala	Glu	Ile	Gln	Lys	Gln	Gly	Gln	Gly	Gln	Trp	Thr	Tyr	Gln	Ile	485	490	495
Tyr	Gln	Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Lys	Met	500	505	510
Arg	Ser	Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Ala	Val	Gln	515	520	525
Lys	Ile	Ala	Leu	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	530	535	540
Arg	Leu	Pro	Ile	Leu	Lys	Glu	Thr	Trp	Asp	Thr	Trp	Trp	Thr	Asp	Tyr	545	550	555
Trp	Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	565	570	575
Leu	Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Thr	Glu	Pro	Ile	Val	Gly	Ala	580	585	590
Glu	Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ser	Asn	Arg	Glu	Thr	Lys	Lys	Gly	595	600	605
Lys	Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Val	Val	Ser	Leu	610	615	620

Thr	Glu	Thr	Thr	Asn	Gln	Lys	Ala	Glu	Leu	Gln	Ala	Ile	His	Leu	Ala	
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Leu	Gln	Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	
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Ala	Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Lys	Ser	Glu	Ser	Glu	Leu	
			660					665					670			
Val	Asn	Gln	Ile	Ile	Glu	Gln	Leu	Ile	Gln	Lys	Glu	Lys	Val	Tyr	Leu	
		675					680					685				
Ser	Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	
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Lys	Leu	Val	Ser	Ala	Gly	Ile	Arg	Lys	Ile	Leu	Phe	Leu	Asp	Gly	Ile	
705					710					715					720	
Asp	Lys	Ala	Gln	Glu	Glu	His	Glu	Lys	Tyr	His	Asn	Asn	Trp	Arg	Ala	
			725						730					735		
Met	Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Val	Val	Ala	Lys	Glu	Ile	Val	
			740					745					750			
Ala	Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	
		755					760					765				
Val	Asp	Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	
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Gly	Lys	Ile	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	
785					790					795					800	
Ala	Glu	Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Ile	
			805						810					815		
Leu	Lys	Leu	Ala	Gly	Arg	Trp	Pro	Val	Lys	Ile	Ile	His	Thr	Asp	Asn	
			820					825					830			
Gly	Ser	Asn	Phe	Thr	Ser	Ala	Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala	
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Gly	Ile	Gln	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly	
	850					855					860					
Val	Val	Glu	Ser	Met	Asn	Lys	Glu	Leu	Lys	Lys	Ile	Ile	Gly	Gln	Val	
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Arg	Asp	Gln	Ala	Glu	His	Leu	Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe	
			885						890					895		
Ile	His	Asn	Phe	Lys	Arg	Lys	Gly	Gly	Ile	Gly	Gly	Tyr	Ser	Ala	Gly	
		900						905					910			
Glu	Arg	Ile	Ile	Asp	Ile	Ile	Ala	Thr	Asp	Ile	Gln	Thr	Arg	Glu	Leu	
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Gln Lys Gln Ile Thr Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg Asp
 930 935 940
 Ser Arg Asp Pro Val Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly
 945 950 955 960
 Glu Gly Ala Val Val Ile Gln Asp Asn Ser Glu Ile Lys Val Val Pro
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 Arg Arg Lys Ala Lys Ile Ile Arg Asp Tyr Gly Lys Gln Met Ala Gly
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 Asp Asp Cys Val Ala Gly Arg Gln Asp Glu Asp
 995 1000

<210> 234
 <211> 3009
 <212> DNA
 <213> Human immunodeficiency virus

<400> 234
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 tccgagaccg gcgccgagcg ccagggcacc gtgtccttca acttccccca gatcaccctg 180
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<210> 235

<211> 3012

<212> DNA

<213> Human immunodeficiency virus

<400> 235

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ctgcaggact cccggtccga ggtgaacatc gtgaccgact cccagtagcg cctgggcatc 1980
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gacgaggact aa 3012

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<210> 236
<211> 1003
<212> PRT
<213> Human immunodeficiency virus

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<400> 236
Phe Phe Arg Glu Asn Leu Ala Phe Gln Gln Gly Glu Ala Arg Lys Phe
 1             5             10             15

Ser Ser Glu Gln Thr Arg Ala Asn Ser Pro Ala Ser Arg Glu Leu Arg
      20             25             30

Val Arg Arg Gly Asp Asn Ser Leu Pro Glu Ala Gly Ala Glu Arg Gln
      35             40             45

Gly Thr Gly Ser Ser Leu Asp Phe Pro Gln Ile Thr Leu Trp Gln Arg
      50             55             60

Pro Leu Val Thr Ile Lys Val Gly Gly Gln Leu Arg Glu Ala Leu Leu
      65             70             75             80

Asp Thr Gly Ala Asp Asp Thr Val Leu Glu Asp Ile Asn Leu Pro Gly
      85             90             95

Lys Trp Lys Pro Lys Met Ile Gly Gly Ile Gly Gly Phe Ile Lys Val
      100            105            110

Arg Gln Tyr Asp Gln Ile Pro Ile Glu Ile Cys Gly Gln Lys Ala Ile
      115            120            125

Gly Thr Val Leu Val Gly Pro Thr Pro Val Asn Ile Ile Gly Arg Asn
      130            135            140

Met Leu Thr Gln Ile Gly Cys Thr Leu Asn Phe Pro Ile Ser Pro Ile
      145            150            155            160

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Glu	Thr	Val	Pro	Val	Lys	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val	165	170	175
Lys	Gln	Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Glu	Ile	180	185	190
Cys	Thr	Glu	Met	Glu	Lys	Glu	Gly	Lys	Ile	Ser	Lys	Ile	Gly	Pro	Glu	195	200	205
Asn	Pro	Tyr	Asn	Thr	Pro	Val	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	210	215	220
Lys	Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	225	230	235
Asp	Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	245	250	255
Lys	Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	260	265	270
Val	Pro	Leu	Asp	Lys	Glu	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	275	280	285
Ser	Ile	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	290	295	300
Pro	Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	305	310	315
Lys	Ile	Leu	Glu	Pro	Phe	Arg	Ala	Lys	Asn	Pro	Glu	Ile	Val	Ile	Tyr	325	330	335
Gln	Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	340	345	350
His	Arg	Thr	Lys	Ile	Glu	Glu	Leu	Arg	Glu	His	Leu	Leu	Arg	Trp	Gly	355	360	365
Phe	Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	370	375	380
Met	Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Ala	Ile	Gln	385	390	395
Leu	Pro	Asp	Lys	Ser	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	405	410	415
Gly	Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Arg	Val	Lys	420	425	430
His	Leu	Cys	Lys	Leu	Leu	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Val	Val	435	440	445
Pro	Leu	Thr	Ala	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	450	455	460

Leu	Lys	Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	465	470	475	480
Ile	Ala	Glu	Ile	Gln	Lys	Gln	Gly	His	Asp	Gln	Trp	Thr	Tyr	Gln	Ile	485	490	495	
Tyr	Gln	Glu	Pro	His	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Arg	Arg	500	505	510	
Lys	Ser	Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Val	Val	Gln	515	520	525	
Lys	Ile	Ala	Thr	Glu	Gly	Ile	Val	Ile	Trp	Gly	Lys	Val	Pro	Lys	Phe	530	535	540	
Arg	Leu	Pro	Ile	Gln	Lys	Glu	Thr	Trp	Glu	Ile	Trp	Trp	Thr	Glu	Tyr	545	550	555	560
Trp	Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	565	570	575	
Leu	Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Thr	Glu	Pro	Ile	Val	Gly	Ala	580	585	590	
Glu	Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Leu	Gly	595	600	605	
Lys	Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Val	Val	Pro	Leu	610	615	620	
Thr	Glu	Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	Gln	Ala	Ile	His	Leu	Ala	625	630	635	640
Leu	Gln	Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	645	650	655	
Ala	Leu	Gly	Ile	Ile	Gln	Ala	His	Pro	Asp	Lys	Ser	Glu	Ser	Glu	Leu	660	665	670	
Val	Asn	Gln	Ile	Ile	Glu	Gln	Leu	Ile	Gln	Lys	Glu	Arg	Val	Tyr	Leu	675	680	685	
Ser	Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	690	695	700	
Lys	Leu	Val	Ser	Thr	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	705	710	715	720
Asp	Lys	Ala	Gln	Glu	Glu	His	Glu	Lys	Tyr	His	Ser	Asn	Trp	Arg	Ala	725	730	735	
Met	Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Val	Val	Ala	Lys	Glu	Ile	Val	740	745	750	
Ala	Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	755	760	765	

Val Asp Cys Ser Pro Gly Ile Trp Gln Leu Asp Cys Thr His Leu Glu
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 Gly Lys Ile Ile Leu Val Ala Val His Val Ala Ser Gly Tyr Ile Glu
 785 790 795 800
 Ala Glu Val Ile Pro Ala Glu Thr Gly Gln Glu Thr Ala Tyr Phe Ile
 805 810 815
 Leu Lys Leu Ala Gly Arg Trp Pro Val Lys Ile Ile His Thr Asp Asn
 820 825 830
 Gly Ser Asn Phe Thr Ser Thr Val Val Lys Ala Ala Cys Trp Trp Ala
 835 840 845
 Gly Ile Gln Gln Glu Phe Gly Ile Pro Tyr Asn Pro Gln Ser Gln Gly
 850 855 860
 Val Val Glu Ser Met Asn Lys Glu Leu Lys Lys Ile Ile Gly Gln Val
 865 870 875 880
 Arg Asp Gln Ala Glu His Leu Lys Thr Ala Val Gln Met Ala Val Phe
 885 890 895
 Ile His Asn Phe Lys Arg Lys Gly Gly Ile Gly Gly Tyr Ser Ala Gly
 900 905 910
 Glu Arg Ile Ile Asp Ile Ile Ala Thr Asp Ile Gln Thr Lys Glu Leu
 915 920 925
 Gln Lys Gln Ile Thr Lys Ile Gln Asn Phe Arg Val Tyr Phe Arg Asp
 930 935 940
 Ser Arg Asp Pro Val Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly
 945 950 955 960
 Glu Gly Ala Val Val Ile Gln Asp Asn Asn Glu Ile Lys Val Val Pro
 965 970 975
 Arg Arg Lys Ala Lys Ile Ile Arg Asp Tyr Gly Lys Gln Met Ala Gly
 980 985 990
 Asp Asp Cys Val Ala Gly Arg Gln Asp Glu Asp
 995 1000

<210> 237
 <211> 1002
 <212> PRT
 <213> Human immunodeficiency virus

<400> 237
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 Ser Ser Glu Gln Ala Arg Ala Asn Ser Pro Thr Arg Arg Glu Leu Arg
 20 25 30

Val	Arg	Arg	Gly	Asp	Ser	Pro	Leu	Pro	Glu	Ala	Gly	Ala	Glu	Gly	Lys	35	40	45
Gly	Ala	Ile	Ser	Leu	Ser	Phe	Pro	Gln	Ile	Thr	Leu	Trp	Gln	Arg	Pro	50	55	60
Leu	Val	Thr	Val	Lys	Ile	Gly	Gly	Gln	Leu	Ile	Glu	Ala	Leu	Leu	Asp	65	70	75
Thr	Gly	Ala	Asp	Asp	Thr	Val	Leu	Glu	Glu	Ile	Asn	Leu	Pro	Gly	Lys	85	90	95
Trp	Lys	Pro	Lys	Met	Ile	Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys	Val	Arg	100	105	110
Gln	Tyr	Asp	Gln	Ile	Leu	Ile	Glu	Ile	Ser	Gly	Lys	Lys	Ala	Ile	Gly	115	120	125
Thr	Val	Leu	Val	Gly	Pro	Thr	Pro	Ile	Asn	Ile	Ile	Gly	Arg	Asn	Met	130	135	140
Leu	Thr	Gln	Ile	Gly	Cys	Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile	Glu	145	150	155
Thr	Val	Pro	Val	Lys	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val	Lys	165	170	175
Gln	Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Glu	Ile	Cys	180	185	190
Thr	Glu	Met	Glu	Lys	Glu	Gly	Lys	Ile	Ser	Lys	Ile	Gly	Pro	Glu	Asn	195	200	205
Pro	Tyr	Asn	Thr	Pro	Ile	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	Lys	210	215	220
Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	Asp	225	230	235
Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	Lys	245	250	255
Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	Val	260	265	270
Pro	Leu	Asp	Glu	Asn	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser	275	280	285
Thr	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	Pro	290	295	300
Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	Lys	305	310	315
Ile	Leu	Glu	Pro	Phe	Arg	Thr	Lys	Asn	Pro	Glu	Ile	Val	Ile	Tyr	Gln	325	330	335

Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	His
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Arg	Ala	Lys	Ile	Glu	Glu	Leu	Arg	Glu	His	Leu	Leu	Arg	Trp	Gly	Phe
		355					360					365			
Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	Met
		370				375					380				
Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Gln	Leu
385					390					395					400
Pro	Asp	Lys	Glu	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	Gly
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Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Lys	Gln
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Leu	Cys	Lys	Leu	Leu	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Ile	Val	Pro
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Leu	Thr	Ala	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	Leu
						455					460				
Lys	Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Glu	Leu	Ile
465					470					475					480
Ala	Glu	Val	Gln	Lys	Gln	Gly	Leu	Asp	Gln	Trp	Thr	Tyr	Gln	Ile	Tyr
				485					490					495	
Gln	Glu	Pro	Tyr	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Lys	Arg	Gly
			500					505					510		
Ser	Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Val	Val	Gln	Lys
		515					520					525			
Ile	Ala	Thr	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	Lys
						535					540				
Leu	Pro	Ile	Arg	Lys	Glu	Thr	Trp	Glu	Val	Trp	Trp	Thr	Glu	Tyr	Trp
545					550					555					560
Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	Leu
				565					570					575	
Val	Lys	Leu	Trp	Tyr	Arg	Leu	Glu	Thr	Glu	Pro	Ile	Pro	Gly	Ala	Glu
			580					585					590		
Thr	Tyr	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Leu	Gly	Lys
		595					600					605			
Ala	Gly	Tyr	Val	Thr	Asp	Lys	Gly	Lys	Gln	Lys	Ile	Ile	Thr	Leu	Thr
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Glu	Thr	Thr	Asn	Gln	Lys	Ala	Glu	Leu	Gln	Ala	Ile	His	Leu	Ala	Leu
625					630					635					640

Gln	Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	Ala	645	650	655	
Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Arg	Ser	Glu	Ser	Glu	Leu	Val	660	665	670	
Asn	Gln	Ile	Ile	Glu	Gln	Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu	Ser	675	680	685	
Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	Lys	690	695	700	
Leu	Val	Ser	Ser	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	Asp	705	710	715	720
Lys	Ala	Gln	Glu	Glu	His	Glu	Arg	Tyr	His	Ser	Asn	Trp	Arg	Ala	Met	725	730	735	
Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Ile	Val	Ala	Lys	Glu	Ile	Val	Ala	740	745	750	
Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	Val	755	760	765	
Asp	Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	Gly	770	775	780	
Lys	Ile	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	Ala	785	790	795	800
Glu	Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Ile	Leu	805	810	815	
Lys	Leu	Ala	Gly	Arg	Trp	Pro	Val	Lys	Val	Ile	His	Thr	Asp	Asn	Gly	820	825	830	
Ser	Asn	Phe	Thr	Ser	Ala	Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala	Asn	835	840	845	
Ile	Thr	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly	Val	850	855	860	
Val	Glu	Ser	Met	Asn	Lys	Glu	Leu	Lys	Lys	Ile	Ile	Gly	Gln	Val	Arg	865	870	875	880
Asp	Gln	Ala	Glu	His	Leu	Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe	Ile	885	890	895	
His	Asn	Phe	Lys	Arg	Lys	Gly	Gly	Ile	Gly	Gly	Tyr	Ser	Ala	Gly	Glu	900	905	910	
Arg	Ile	Ile	Asp	Ile	Ile	Ala	Ser	Asp	Ile	Gln	Thr	Lys	Glu	Leu	Gln	915	920	925	
Lys	Gln	Ile	Thr	Lys	Ile	Gln	Asn	Phe	Arg	Val	Tyr	Tyr	Arg	Asp	Ser	930	935	940	

Arg Asp Pro Ile Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly Glu
 945 950 955 960

Gly Ala Val Val Ile Gln Asp Asn Asn Glu Ile Lys Val Val Pro Arg
 965 970 975

Arg Lys Ala Lys Ile Ile Arg Asp Tyr Gly Lys Gln Met Ala Gly Asp
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Asp Cys Val Ala Gly Arg Gln Asp Glu Asp
 995 1000

<210> 238

<211> 3012

<212> DNA

<213> Human immunodeficiency virus

<400> 238

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cccgaggccg	gcgccgagcg	ccagggcacc	ggctcctccc	tggaacttccc	ccagatcacc	180
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gacaccggcg	ccgacgacac	cgtgctggag	gacatcaacc	tgcccggcaa	gtggaagccc	300
aagatgatcg	gcggcatcgg	cggcttcac	aaggtgcgcc	agtacgacca	gatccccatc	360
gagatctgcg	gccagaaggc	catcggcacc	gtgctggtgg	gccccacccc	cgtgaacatc	420
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gagggcgccg	tggatgatcca	ggacaacaac	gagatcaagg	tgggtccccg	ccgcaaggcc	2940
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<210> 239

<211> 3009

<212> DNA

<213> Human immunodeficiency virus

<400> 239

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<210> 240
 <211> 1001
 <212> PRT
 <213> Human immunodeficiency virus

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<400> 240
Phe Phe Arg Glu Asn Leu Ala Phe Gln Gln Arg Glu Ala Arg Lys Phe
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Ser Pro Glu Gln Ala Arg Ala Asn Ser Pro Thr Ser Arg Glu Leu Arg
      20             25            30

Val Arg Arg Gly Asp Asp Pro Leu Ser Glu Ala Gly Ala Glu Gly Gln
      35             40            45

Gly Thr Ser Leu Ser Phe Pro Gln Ile Thr Leu Trp Gln Arg Pro Leu
      50             55            60

Val Thr Val Lys Ile Glu Gly Gln Leu Arg Glu Ala Leu Leu Asp Thr
      65             70            75            80

Gly Ala Asp Asp Thr Val Leu Glu Glu Ile Asn Leu Pro Gly Lys Trp
      85             90            95

Lys Pro Lys Met Ile Gly Gly Ile Gly Gly Phe Ile Lys Val Arg Gln
      100            105           110

Tyr Glu Gln Val Ala Ile Glu Ile Cys Gly Lys Lys Ala Ile Gly Thr
      115            120           125

Val Leu Val Gly Pro Thr Pro Val Asn Ile Ile Gly Arg Asn Ile Leu
      130            135           140

Thr Gln Ile Gly Cys Thr Leu Asn Phe Pro Ile Ser Pro Ile Glu Thr
      145            150           155           160

Val Pro Val Lys Leu Lys Pro Gly Met Asp Gly Pro Lys Val Lys Gln
      165            170           175

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Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Glu	Ile	Cys	Ile	180	185	190
Glu	Met	Glu	Lys	Glu	Gly	Lys	Ile	Ser	Lys	Ile	Gly	Pro	Glu	Asn	Pro	195	200	205
Tyr	Asn	Thr	Pro	Ile	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	Lys	Trp	210	215	220
Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	Asp	Phe	225	230	235
Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	Lys	Lys	245	250	255
Lys	Ser	Val	Ser	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	Val	Pro	260	265	270
Leu	Asp	Lys	Asp	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser	Ile	275	280	285
Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	Pro	Gln	290	295	300
Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	Lys	Ile	305	310	315
Leu	Glu	Pro	Phe	Arg	Lys	Gln	Asn	Pro	Glu	Met	Ile	Ile	Tyr	Gln	Tyr	325	330	335
Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	His	Arg	340	345	350
Ala	Lys	Ile	Glu	Glu	Leu	Arg	Ala	His	Leu	Leu	Arg	Trp	Gly	Phe	Thr	355	360	365
Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	Met	Gly	370	375	380
Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Val	Lys	Leu	Pro	385	390	395
Glu	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	Gly	Lys	405	410	415
Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Lys	Gln	Leu	420	425	430
Cys	Lys	Leu	Leu	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Ile	Val	Pro	Leu	435	440	445
Thr	Lys	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	Leu	Arg	450	455	460
Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	Ile	Ala	465	470	475
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Glu	Ile	Gln	Lys	Gln	Gly	Pro	Asp	Gln	Trp	Thr	Tyr	Gln	Ile	Tyr	Gln		
				485					490					495			
Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Lys	Met	Arg	Thr		
			500					505					510				
Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Ala	Val	Gln	Lys	Ile		
		515					520					525					
Ala	Thr	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Ile	Pro	Lys	Phe	Arg	Leu		
	530					535					540						
Pro	Ile	Gln	Lys	Glu	Thr	Trp	Glu	Thr	Trp	Trp	Thr	Glu	His	Trp	Gln		
545					550				555						560		
Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	His	Leu	Val		
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Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Thr	Glu	Pro	Ile	Ala	Gly	Ala	Glu	Thr		
			580					585					590				
Tyr	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Ile	Gly	Lys	Ala		
		595					600					605					
Gly	Tyr	Val	Thr	Asp	Arg	Gly	Lys	Gln	Lys	Val	Val	Ser	Leu	Thr	Glu		
	610					615					620						
Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	Gln	Ala	Ile	Tyr	Leu	Ala	Leu	Gln		
625					630					635					640		
Asp	Ser	Gly	Leu	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	Ala	Leu		
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Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Lys	Ser	Glu	Ser	Glu	Leu	Val	Asn		
			660					665					670				
Gln	Ile	Ile	Glu	Glu	Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu	Ser	Trp		
		675					680					685					
Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	Lys	Leu		
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Val	Ser	Ser	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	Asp	Lys		
705					710					715				720			
Ala	Gln	Glu	Glu	His	Glu	Arg	Tyr	His	Asn	Asn	Trp	Arg	Ala	Met	Ala		
				725					730					735			
Ser	Asp	Phe	Asn	Leu	Pro	Pro	Ile	Val	Ala	Lys	Glu	Ile	Val	Ala	Ser		
			740					745					750				
Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	Val	Asp		
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Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	Gly	Lys		
	770					775					780						

Val Ile Leu Val Ala Val His Val Ala Ser Gly Tyr Ile Glu Ala Glu
 785 790 795 800
 Val Ile Pro Ala Glu Thr Gly Gln Glu Thr Ala Tyr Phe Ile Leu Lys
 805 810 815
 Leu Ala Gly Arg Trp Pro Val Lys Met Ile His Thr Asp Asn Gly Ser
 820 825 830
 Asn Phe Thr Ser Ala Ala Val Lys Ala Ala Cys Trp Trp Ala Asp Ile
 835 840 845
 Gln Gln Glu Phe Gly Ile Pro Tyr Asn Pro Gln Ser Gln Gly Val Val
 850 855 860
 Glu Ser Met Asn Lys Glu Leu Lys Lys Ile Ile Gly Gln Val Arg Asp
 865 870 875 880
 Gln Ala Glu His Leu Arg Thr Ala Val Gln Met Ala Val Phe Ile His
 885 890 895
 Asn Phe Lys Arg Lys Gly Gly Ile Gly Gly Tyr Ser Ala Gly Glu Arg
 900 905 910
 Ile Ile Asp Ile Ile Ala Thr Asp Ile Gln Thr Lys Glu Leu Gln Lys
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 Gln Ile Ser Lys Ile Gln Lys Phe Arg Val Tyr Tyr Arg Asp Ser Arg
 930 935 940
 Asp Pro Ile Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly Glu Gly
 945 950 955 960
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 Cys Val Ala Gly Arg Gln Asp Glu Asp
 995 1000

<210> 241

<211> 1003

<212> PRT

<213> Human immunodeficiency virus

<400> 241

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 Asp Gly Gly Arg Asp Asn Leu Leu Thr Glu Ala Gly Ala Glu Arg Gln
 35 40 45

Gly	Thr	Ser	Ser	Ser	Phe	Ser	Phe	Pro	Gln	Ile	Thr	Leu	Trp	Gln	Arg
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Pro	Leu	Val	Thr	Val	Lys	Ile	Gly	Gly	Gln	Leu	Lys	Glu	Ala	Leu	Leu
65					70					75					80
Asp	Thr	Gly	Ala	Asp	Asp	Thr	Val	Leu	Glu	Asp	Ile	Asn	Leu	Pro	Gly
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Lys	Trp	Lys	Pro	Lys	Met	Ile	Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys	Val
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Arg	Gln	Tyr	Asp	Gln	Ile	Leu	Ile	Glu	Ile	Cys	Gly	Lys	Lys	Ala	Ile
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Gly	Thr	Val	Leu	Val	Gly	Pro	Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn
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Met	Leu	Thr	Gln	Ile	Gly	Cys	Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile
145					150					155					160
Asp	Thr	Val	Pro	Val	Thr	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val
				165					170					175	
Lys	Gln	Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Glu	Ile
			180					185					190		
Cys	Lys	Glu	Met	Glu	Glu	Glu	Gly	Lys	Ile	Ser	Lys	Ile	Gly	Pro	Glu
		195					200					205			
Asn	Pro	Tyr	Asn	Thr	Pro	Val	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr
		210				215					220				
Lys	Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln
225					230					235					240
Asp	Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys
				245					250					255	
Lys	Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser
			260					265					270		
Val	Pro	Leu	Asp	Glu	Ser	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro
		275					280					285			
Ser	Ile	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu
		290				295					300				
Pro	Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr
305					310					315					320
Lys	Ile	Leu	Glu	Pro	Phe	Arg	Ile	Lys	Asn	Pro	Glu	Met	Val	Ile	Tyr
				325					330					335	
Gln	Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln
			340					345					350		

His	Arg	Thr	Lys	Ile	Glu	Glu	Leu	Arg	Ala	His	Leu	Leu	Ser	Trp	Gly	355	360	365
Phe	Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	370	375	380
Met	Gly	Tyr	Glu	Leu	His	Pro	Asp	Arg	Trp	Thr	Val	Gln	Pro	Ile	Glu	385	390	395
Leu	Pro	Glu	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	405	410	415
Gly	Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Ala	Gly	Ile	Lys	Val	Lys	420	425	430
Gln	Leu	Cys	Lys	Leu	Leu	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Ile	Val	435	440	445
Pro	Leu	Thr	Glu	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	450	455	460
Leu	Lys	Thr	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	465	470	475
Val	Ala	Glu	Val	Gln	Lys	Gln	Gly	Gln	Asp	Gln	Trp	Thr	Tyr	Gln	Ile	485	490	495
Tyr	Gln	Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Arg	Lys	500	505	510
Arg	Ser	Ala	His	Thr	Asn	Asp	Val	Arg	Gln	Leu	Thr	Glu	Val	Val	Gln	515	520	525
Lys	Ile	Ala	Thr	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	530	535	540
Arg	Leu	Pro	Ile	Gln	Arg	Glu	Thr	Trp	Glu	Thr	Trp	Trp	Met	Glu	Tyr	545	550	555
Trp	Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	565	570	575
Leu	Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Lys	Asp	Pro	Ile	Val	Gly	Ala	580	585	590
Glu	Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ala	Ser	Arg	Glu	Thr	Lys	Leu	Gly	595	600	605
Lys	Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Val	Val	Ser	Leu	610	615	620
Thr	Glu	Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	His	Ala	Ile	His	Leu	Ala	625	630	635
Leu	Gln	Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	645	650	655

Ala	Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Arg	Ser	Glu	Ser	Glu	Val	660	665	670
Val	Asn	Gln	Ile	Ile	Glu	Glu	Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu	675	680	685
Ser	Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	690	695	700
Lys	Leu	Val	Ser	Ser	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	705	710	715
Asp	Lys	Ala	Gln	Glu	Glu	His	Glu	Arg	Tyr	His	Ser	Asn	Trp	Arg	Thr	725	730	735
Met	Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Ile	Val	Ala	Lys	Glu	Ile	Val	740	745	750
Ala	Asn	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	755	760	765
Val	Asp	Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	770	775	780
Gly	Lys	Val	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	785	790	795
Ala	Glu	Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Leu	805	810	815
Leu	Lys	Leu	Ala	Gly	Arg	Trp	Pro	Val	Lys	Val	Ile	His	Thr	Asp	Asn	820	825	830
Gly	Ser	Asn	Phe	Thr	Ser	Ala	Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala	835	840	845
Asn	Val	Arg	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly	850	855	860
Val	Val	Glu	Ser	Met	Asn	Lys	Glu	Leu	Lys	Lys	Ile	Ile	Gly	Gln	Val	865	870	875
Arg	Glu	Gln	Ala	Glu	His	Leu	Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe	885	890	895
Ile	His	Asn	Phe	Lys	Arg	Lys	Gly	Gly	Ile	Gly	Gly	Tyr	Ser	Ala	Gly	900	905	910
Glu	Arg	Ile	Ile	Asp	Ile	Ile	Ala	Thr	Asp	Ile	Gln	Thr	Lys	Glu	Leu	915	920	925
Gln	Lys	Gln	Ile	Thr	Lys	Ile	Gln	Asn	Phe	Arg	Val	Tyr	Tyr	Arg	Asp	930	935	940
Ser	Arg	Asp	Pro	Ile	Trp	Lys	Gly	Pro	Ala	Lys	Leu	Leu	Trp	Lys	Gly	945	950	955

Glu Gly Ala Val Val Ile Gln Asp Asn Ser Asp Ile Lys Val Val Pro
 965 970 975

Arg Arg Lys Ala Lys Ile Ile Arg Asp Tyr Gly Lys Gln Met Ala Gly
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Asp Asp Cys Val Ala Gly Arg Gln Asp Glu Asp
 995 1000

<210> 242
 <211> 3006
 <212> DNA
 <213> Human immunodeficiency virus

<400> 242
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gactaa						3006

<210> 243

<211> 3012

<212> DNA

<213> Human immunodeficiency virus

<400> 243

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gacaccggcg	ccgacgacac	cgtgctggag	gacatcaacc	tgcccgga	gtggaagccc	300
aagatgatcg	gcggcatcgg	cggttctcat	aaggtgcgcc	agtacgacca	gacctctgatc	360
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```

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gacgaggact aa 3012

```

<210> 244

<211> 1003

<212> PRT

<213> Human immunodeficiency virus

<400> 244

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Phe Phe Arg Glu Asn Leu Ala Phe Gln Gln Gly Glu Ala Arg Lys Phe
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```

```

Ser Ser Glu Gln Thr Gly Thr Asn Ser Pro Thr Ser Arg Glu Leu Trp
          20             25             30

```

```

Asp Gly Gly Arg Asp Asn Leu Leu Ser Glu Ala Gly Thr Glu Gly Gln
 35             40             45

```

```

Gly Thr Ile Ser Ser Phe Asn Phe Pro Gln Ile Thr Leu Trp Gln Arg
 50             55             60

```

```

Pro Leu Val Thr Val Arg Ile Gly Gly Gln Leu Ile Glu Ala Leu Leu
 65             70             75             80

```

```

Asp Thr Gly Ala Asp Asp Thr Val Leu Glu Glu Ile Asn Leu Pro Gly
          85             90             95

```

```

Lys Trp Lys Pro Lys Met Ile Gly Gly Ile Gly Gly Phe Ile Lys Val
 100             105             110

```

```

Arg Gln Tyr Asp Gln Ile Leu Ile Glu Ile Cys Gly Lys Lys Ala Ile
 115             120             125

```

```

Gly Thr Val Leu Val Gly Pro Thr Pro Val Asn Ile Ile Gly Arg Asn
 130             135             140

```

```

Met Leu Thr Gln Ile Gly Cys Thr Leu Asn Phe Pro Ile Ser Pro Ile
 145             150             155             160

```

```

Glu Thr Val Pro Val Lys Leu Lys Pro Gly Met Asp Gly Pro Lys Val
          165             170             175

```

```

Lys Gln Trp Pro Leu Thr Glu Glu Lys Ile Lys Ala Leu Thr Asp Ile
 180             185             190

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Cys	Thr	Glu	Met	Glu	Lys	Glu	Gly	Lys	Ile	Ser	Lys	Ile	Gly	Pro	Glu
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Asn	Pro	Tyr	Asn	Thr	Pro	Val	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr
	210					215					220				
Lys	Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln
225					230					235					240
Asp	Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys
				245					250					255	
Lys	Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser
			260					265					270		
Val	Pro	Leu	Asp	Lys	Asp	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro
		275					280					285			
Ser	Val	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu
	290					295					300				
Pro	Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ala	Ser	Met	Thr
305					310					315					320
Lys	Ile	Leu	Glu	Pro	Phe	Arg	Thr	Lys	Asn	Pro	Glu	Ile	Val	Ile	Tyr
				325					330					335	
Gln	Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln
			340					345					350		
His	Arg	Ala	Lys	Ile	Glu	Glu	Leu	Arg	Glu	His	Leu	Leu	Arg	Trp	Gly
		355					360					365			
Phe	Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp
	370					375					380				
Met	Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Gln
385					390					395					400
Leu	Pro	Glu	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val
				405					410					415	
Gly	Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Ala	Gly	Ile	Lys	Val	Lys
			420					425					430		
Gln	Leu	Cys	Lys	Leu	Leu	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Ile	Val
		435					440					445			
Thr	Leu	Thr	Glu	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile
	450					455					460				
Leu	Lys	Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Thr	Lys	Asp	Leu
465					470					475					480
Ile	Ala	Glu	Ile	Gln	Lys	Gln	Gly	Gln	Asp	Gln	Trp	Thr	Tyr	Gln	Ile
				485					490					495	

Tyr	Gln	Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Lys	Met	500	505	510
Arg	Ser	Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Val	Val	Gln	515	520	525
Lys	Val	Ala	Thr	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	530	535	540
Arg	Leu	Pro	Ile	Gln	Arg	Glu	Thr	Trp	Glu	Ala	Trp	Trp	Met	Glu	Tyr	545	550	555
Trp	Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	565	570	575
Leu	Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Lys	Asp	Pro	Ile	Val	Gly	Ala	580	585	590
Glu	Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Leu	Gly	595	600	605
Lys	Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Val	Val	Ser	Leu	610	615	620
Thr	Glu	Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	His	Ala	Ile	His	Leu	Ala	625	630	635
Leu	Gln	Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	645	650	655
Ala	Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Arg	Ser	Glu	Ser	Glu	Leu	660	665	670
Val	Asn	Gln	Ile	Ile	Glu	Lys	Leu	Ile	Glu	Lys	Asp	Lys	Val	Tyr	Leu	675	680	685
Ser	Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	690	695	700
Lys	Leu	Val	Ser	Asn	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	705	710	715
Asp	Lys	Ala	Gln	Glu	Glu	His	Glu	Arg	Tyr	His	Ser	Asn	Trp	Arg	Ala	725	730	735
Met	Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Ile	Val	Ala	Lys	Glu	Ile	Val	740	745	750
Ala	Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	755	760	765
Val	Asp	Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	770	775	780
Gly	Lys	Ile	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	785	790	795
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Pro	Leu	Val	Thr	Val	Arg	Ile	Gly	Gly	Gln	Leu	Lys	Glu	Ala	Leu	Leu	65	70	75	80
Asp	Thr	Gly	Ala	Asp	Asp	Thr	Val	Leu	Glu	Asp	Ile	Asn	Leu	Pro	Gly	85	90	95	
Lys	Trp	Lys	Pro	Lys	Met	Ile	Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys	Val	100	105	110	
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Glu	Thr	Val	Pro	Val	Thr	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val	165	170	175	
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Asn	Pro	Tyr	Asn	Thr	Pro	Val	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	210	215	220	
Lys	Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	225	230	235	240
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Pro	Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	305	310	315	320
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Gln	Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	340	345	350	
His	Arg	Thr	Lys	Ile	Glu	Glu	Leu	Arg	Glu	His	Leu	Leu	Arg	Trp	Gly	355	360	365	

Phe	Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	370	375	380	
Met	Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Val	385	390	395	400
Leu	Pro	Glu	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	405	410	415	
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Pro	Leu	Thr	Ala	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	450	455	460	
Leu	Lys	Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	465	470	475	480
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Arg	Gly	Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Ala	Val	Gln	515	520	525	
Lys	Ile	Ala	Thr	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	530	535	540	
Lys	Leu	Pro	Ile	Gln	Lys	Glu	Thr	Trp	Glu	Thr	Trp	Trp	Thr	Glu	Tyr	545	550	555	560
Trp	Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	565	570	575	
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Val	Ser	Gln	Ile	Ile	Glu	Gln	Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu	675	680	685
Ala	Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	690	695	700
Lys	Leu	Val	Ser	Ala	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	705	710	715
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Val	Val	Glu	Ser	Met	Asn	Lys	Gln	Leu	Lys	Gln	Ile	Ile	Gly	Gln	Val	865	870	875
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Ile	His	Asn	Phe	Lys	Arg	Lys	Gly	Gly	Ile	Gly	Gly	Tyr	Ser	Ala	Gly	900	905	910
Glu	Arg	Ile	Ile	Asp	Ile	Ile	Ala	Thr	Asp	Ile	Gln	Thr	Lys	Glu	Leu	915	920	925
Gln	Lys	Gln	Ile	Ile	Lys	Ile	Gln	Asn	Phe	Arg	Val	Tyr	Tyr	Arg	Asp	930	935	940
Ser	Arg	Asp	Pro	Ile	Trp	Lys	Gly	Pro	Ala	Lys	Leu	Leu	Trp	Lys	Gly	945	950	955
Glu	Gly	Ala	Val	Val	Ile	Gln	Asp	Asn	Asn	Asp	Ile	Lys	Val	Val	Pro	965	970	975

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<210> 246
 <211> 3012
 <212> DNA
 <213> Human immunodeficiency virus

<400> 246
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<210> 247

<211> 3012

<212> DNA

<213> Human immunodeficiency virus

<400> 247

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<210> 248
 <211> 1002
 <212> PRT
 <213> Human immunodeficiency virus

<400> 248

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Asp	Glu	Arg	Gly	Asp	Asn	Leu	Leu	Ser	Glu	Ala	Gly	Thr	Glu	Gly	Gln
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Gly	Thr	Ile	Ser	Phe	Asn	Phe	Pro	Gln	Ile	Thr	Leu	Trp	Gln	Arg	Pro
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Leu	Val	Thr	Ile	Lys	Ile	Gly	Gly	Gln	Ile	Arg	Glu	Ala	Leu	Leu	Asp
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Thr	Gly	Ala	Asp	Asp	Thr	Val	Leu	Glu	Glu	Ile	Asn	Leu	Pro	Gly	Lys
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Gln	Tyr	Asp	Gln	Ile	Pro	Ile	Glu	Ile	Cys	Gly	Lys	Lys	Ala	Ile	Gly
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Thr	Val	Leu	Val	Gly	Pro	Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn	Met
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Thr	Val	Pro	Val	Lys	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val	Lys
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Gln	Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Glu	Ile	Cys
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Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	Asp
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Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	Lys
				245					250					255	
Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	Val
			260					265					270		
Pro	Leu	Asp	Pro	Glu	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser
		275					280					285			
Thr	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	Pro
	290					295					300				
Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Cys	Ser	Met	Thr	Lys
305					310					315					320
Ile	Leu	Glu	Pro	Phe	Arg	Thr	Lys	Asn	Pro	Glu	Ile	Val	Ile	Tyr	Gln
				325					330					335	
Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	His
			340					345					350		
Arg	Ala	Lys	Ile	Glu	Glu	Leu	Arg	Glu	His	Leu	Leu	Arg	Trp	Gly	Phe
		355					360					365			
Ser	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	Met
		370				375					380				
Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Gln	Leu
385					390					395					400
Ala	Glu	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	Gly
				405					410					415	
Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Lys	Gln
			420					425					430		
Leu	Cys	Lys	Leu	Leu	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Ile	Val	Pro
		435					440					445			
Leu	Thr	Thr	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	Leu
						455					460				
Lys	Glu	Pro	Val	His	Gly	Ala	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	Ile
465					470					475					480
Ala	Glu	Ile	Gln	Lys	Gln	Gly	Gln	Gly	Gln	Trp	Thr	Tyr	Gln	Ile	Tyr
				485					490					495	
Gln	Glu	Pro	Tyr	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Lys	Thr	Arg
			500					505					510		

Ser	Ala	His	Thr	Asn	Asp	Val	Arg	Gln	Leu	Thr	Glu	Ala	Val	Gln	Lys	515	520	525
Ile	Ala	Met	Glu	Cys	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	Arg	530	535	540
Leu	Pro	Ile	Gln	Lys	Glu	Thr	Trp	Asp	Thr	Trp	Trp	Thr	Glu	Tyr	Trp	545	550	555
Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	Leu	565	570	575
Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Thr	Asp	Pro	Ile	Ala	Gly	Ala	Glu	580	585	590
Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ala	Ser	Arg	Glu	Thr	Lys	Gln	Gly	Lys	595	600	605
Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Val	Val	Ser	Leu	Ser	610	615	620
Glu	Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	Gln	Ala	Ile	Tyr	Leu	Ala	Leu	625	630	635
Gln	Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	Ala	645	650	655
Ile	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Arg	Ser	Glu	Ser	Asp	Leu	Val	660	665	670
Asn	Gln	Ile	Ile	Glu	Gln	Leu	Ile	Gln	Lys	Asp	Lys	Val	Tyr	Leu	Ser	675	680	685
Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	Lys	690	695	700
Leu	Val	Ser	Asn	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	Asp	705	710	715
Lys	Ala	Gln	Glu	Glu	His	Glu	Lys	Tyr	His	Asn	Asn	Trp	Arg	Ala	Met	725	730	735
Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Val	Val	Ala	Lys	Glu	Ile	Val	Ala	740	745	750
Ser	Cys	Asn	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	Val	755	760	765
Asp	Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	Gly	770	775	780
Lys	Ile	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	Ala	785	790	795
Glu	Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Ile	Leu	805	810	815

Lys Leu Ala Gly Arg Trp Pro Val Lys Ile Ile His Thr Asp Asn Gly
 820 825 830
 Pro Asn Phe Thr Ser Ala Ala Val Lys Ala Ala Cys Trp Trp Ala Asp
 835 840 845
 Ile Gln Gln Glu Phe Gly Ile Pro Tyr Asn Pro Gln Ser Gln Gly Val
 850 855 860
 Val Glu Ser Met Asn Lys Glu Leu Lys Lys Ile Ile Gly Gln Val Arg
 865 870 875 880
 Asp Gln Ala Glu His Leu Lys Thr Ala Val Gln Met Ala Val Phe Ile
 885 890 895
 His Asn Phe Lys Arg Lys Gly Gly Ile Gly Gly Tyr Ser Ala Gly Glu
 900 905 910
 Arg Ile Ile Asp Ile Ile Ala Ser Asp Ile Gln Thr Lys Glu Leu Gln
 915 920 925
 Lys Gln Ile Thr Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg Asp Ser
 930 935 940
 Arg Asp Pro Ile Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly Glu
 945 950 955 960
 Gly Ala Val Val Ile Gln Asp Asn Ser Asp Ile Lys Val Val Pro Arg
 965 970 975
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 Asp Cys Val Ala Gly Arg Gln Asp Glu Asp
 995 1000

<210> 249

<211> 1002

<212> PRT

<213> Human immunodeficiency virus

<400> 249

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 20 25 30
 Val Arg Arg Gly Asp Ser Pro Leu Pro Glu Ala Gly Ala Glu Gly Gln
 35 40 45
 Gly Ala Ile Ser Leu Ser Phe Pro Gln Ile Thr Leu Trp Gln Arg Pro
 50 55 60
 Leu Val Thr Val Arg Ile Gly Gly Gln Leu Ile Glu Ala Leu Leu Asp
 65 70 75 80

Thr	Gly	Ala	Asp	Asp	Thr	Val	Leu	Glu	Asp	Ile	Asn	Leu	Pro	Gly	Lys	
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Trp	Lys	Pro	Lys	Met	Ile	Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys	Val	Arg	
			100					105					110			
Gln	Tyr	Asp	Gln	Ile	Leu	Ile	Glu	Ile	Cys	Gly	Lys	Lys	Ala	Ile	Gly	
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Thr	Val	Leu	Val	Gly	Pro	Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn	Met	
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Leu	Thr	Gln	Ile	Gly	Cys	Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile	Glu	
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Thr	Val	Pro	Val	Lys	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val	Lys	
				165					170					175		
Gln	Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Glu	Ile	Cys	
			180					185					190			
Thr	Glu	Met	Glu	Lys	Glu	Gly	Lys	Ile	Ser	Lys	Ile	Gly	Pro	Glu	Asn	
		195					200					205				
Pro	Tyr	Asn	Thr	Pro	Ile	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	Lys	
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Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	Asp	
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Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	Lys	
				245					250					255		
Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	Val	
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Pro	Leu	Asp	Glu	Asp	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser	
		275					280					285				
Ile	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	Pro	
	290					295					300					
Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Ile	Lys	
305					310					315					320	
Ile	Leu	Glu	Pro	Phe	Arg	Ile	Lys	Asn	Pro	Glu	Ile	Val	Ile	Tyr	Gln	
				325					330					335		
Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	His	
			340					345					350			
Arg	Ala	Lys	Ile	Glu	Glu	Leu	Arg	Glu	His	Leu	Leu	Lys	Trp	Gly	Phe	
		355					360					365				
Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	Met	
	370					375					380					

Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Gln	Leu	385	390	395	400
Pro	Asp	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	Gly	405	410	415	
Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Lys	Gln	420	425	430	
Leu	Cys	Lys	Leu	Leu	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Ile	Val	Pro	435	440	445	
Leu	Thr	Ala	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	Leu	450	455	460	
Lys	Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	Ile	465	470	475	480
Ala	Glu	Ile	Gln	Lys	Gln	Gly	Gln	Gly	Gln	Trp	Thr	Tyr	Gln	Ile	Tyr	485	490	495	
Gln	Glu	Pro	His	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Arg	Ile	Lys	500	505	510	
Ser	Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Ala	Val	Gln	Lys	515	520	525	
Ile	Ala	Leu	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	Arg	530	535	540	
Leu	Pro	Ile	Gln	Lys	Glu	Thr	Trp	Glu	Thr	Trp	Trp	Thr	Glu	Tyr	Trp	545	550	555	560
Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	Leu	565	570	575	
Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Thr	Glu	Pro	Ile	Val	Gly	Ala	Glu	580	585	590	
Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Lys	Gly	Lys	595	600	605	
Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Val	Val	Ser	Leu	Thr	610	615	620	
Glu	Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	Gln	Ala	Ile	Asn	Leu	Ala	Leu	625	630	635	640
Gln	Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	Ala	645	650	655	
Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Lys	Ser	Glu	Ser	Glu	Leu	Val	660	665	670	
Asn	Gln	Ile	Ile	Glu	Gln	Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu	Ser	675	680	685	

Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	Lys	690	695	700	
Leu	Val	Ser	Thr	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	Asp	705	710	715	720
Lys	Ala	Gln	Glu	Asp	His	Glu	Arg	Tyr	His	Ser	Asn	Trp	Arg	Ala	Met	725	730	735	
Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Ile	Val	Ala	Lys	Glu	Ile	Val	Ala	740	745	750	
Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	Val	755	760	765	
Asp	Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	Gly	770	775	780	
Lys	Ile	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	Ala	785	790	795	800
Glu	Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Ile	Leu	805	810	815	
Lys	Leu	Ala	Gly	Arg	Trp	Pro	Val	Lys	Val	Ile	His	Thr	Asp	Asn	Gly	820	825	830	
Ser	Asn	Phe	Thr	Ser	Ala	Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala	Asn	835	840	845	
Ile	Thr	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly	Val	850	855	860	
Val	Glu	Ser	Met	Asn	Lys	Glu	Leu	Lys	Lys	Ile	Ile	Gly	Gln	Val	Arg	865	870	875	880
Asp	Gln	Ala	Glu	His	Leu	Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe	Ile	885	890	895	
His	Asn	Phe	Lys	Arg	Lys	Gly	Gly	Ile	Gly	Gly	Tyr	Ser	Ala	Gly	Glu	900	905	910	
Arg	Ile	Ile	Asp	Ile	Ile	Ala	Ser	Asp	Ile	Gln	Thr	Lys	Glu	Leu	Gln	915	920	925	
Lys	Gln	Ile	Thr	Lys	Ile	Gln	Asn	Phe	Arg	Val	Tyr	Tyr	Arg	Asp	Ser	930	935	940	
Arg	Asp	Pro	Ile	Trp	Lys	Gly	Pro	Ala	Lys	Leu	Leu	Trp	Lys	Gly	Glu	945	950	955	960
Gly	Ala	Val	Val	Ile	Gln	Asp	Asn	Ser	Glu	Ile	Lys	Val	Val	Pro	Arg	965	970	975	
Arg	Lys	Ala	Lys	Ile	Ile	Arg	Asp	Tyr	Gly	Lys	Gln	Met	Ala	Gly	Asp	980	985	990	

Asp Cys Val Ala Gly Arg Gln Asp Glu Asp
995 1000

<210> 250

<211> 3009

<212> DNA

<213> Human immunodeficiency virus

<400> 250

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<210> 251

<211> 3009

<212> DNA

<213> Human immunodeficiency virus

<400> 251

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gccgagatcc	agaagcaggg	ccagggccag	tggacctacc	agatctacca	ggagccccac	1500
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caggcccagc	ccgacaagtc	cgagtccgag	ctggtgaacc	agatcatcga	gcagctgatc	2040
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<210> 252

<211> 999

<212> PRT

<213> Human immunodeficiency virus

<400> 252

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          20             25             30

Val Arg Gly Asp Asn Pro Ser Ser Glu Ala Gly Thr Glu Arg Gln Gly
          35             40             45

Thr Leu Asn Phe Pro Gln Ile Thr Leu Trp Gln Arg Pro Leu Val Ser
          50             55             60

Ile Lys Val Gly Gly Gln Ile Lys Glu Ala Leu Leu Asp Thr Gly Ala
          65             70             75             80

Asp Asp Thr Val Leu Glu Glu Val Asn Leu Pro Gly Lys Trp Lys Pro
          85             90             95

Lys Met Ile Gly Gly Ile Gly Gly Phe Ile Lys Val Arg Gln Tyr Glu
          100            105            110

Gln Ile Pro Ile Glu Ile Cys Gly Lys Lys Ala Ile Gly Thr Val Leu
          115            120            125

Val Gly Pro Thr Pro Val Asn Ile Ile Gly Arg Asn Met Leu Thr Gln
          130            135            140

Leu Gly Cys Thr Leu Asn Phe Pro Ile Ser Pro Ile Glu Thr Val Pro
          145            150            155            160

Val Lys Leu Lys Pro Gly Met Asp Gly Pro Lys Val Lys Gln Trp Pro
          165            170            175

Leu Thr Glu Glu Lys Ile Lys Ala Leu Thr Ala Ile Cys Asp Glu Met
          180            185            190

Glu Lys Glu Gly Lys Ile Thr Lys Ile Gly Pro Asp Asn Pro Tyr Asn
          195            200            205

Thr Pro Ile Phe Ala Ile Arg Lys Lys Asp Ser Ser Lys Trp Arg Lys
          210            215            220

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Leu Val Asp Phe Arg Glu Leu Asn Lys Arg Thr Gln Asp Phe Trp Glu
 225 230 235 240
 Val Gln Leu Gly Ile Pro His Pro Ala Gly Leu Lys Lys Lys Lys Ser
 245 250 255
 Val Thr Val Leu Asp Val Gly Asp Ala Tyr Phe Ser Val Pro Leu Asp
 260 265 270
 Lys Asp Phe Arg Lys Tyr Thr Ala Phe Thr Ile Pro Ser Val Asn Asn
 275 280 285
 Glu Thr Pro Gly Ile Arg Tyr Gln Tyr Asn Val Leu Pro Gln Gly Trp
 290 295 300
 Lys Gly Ser Pro Ala Ile Phe Gln Cys Ser Met Thr Lys Ile Leu Glu
 305 310 315 320
 Pro Phe Arg Lys Gln Asn Pro Asp Ile Val Ile Tyr Gln Tyr Met Asp
 325 330 335
 Asp Leu Tyr Val Gly Ser Asp Leu Glu Ile Gly Gln His Arg Thr Lys
 340 345 350
 Ile Glu Glu Leu Arg Glu His Leu Leu Lys Trp Gly Phe Thr Thr Pro
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 Asp Lys Lys His Gln Lys Glu Pro Pro Phe Leu Trp Met Gly Tyr Glu
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 Leu His Pro Asp Lys Trp Thr Val Gln Pro Ile Gln Leu Pro Glu Lys
 385 390 395 400
 Asp Ser Trp Thr Val Asn Asp Ile Gln Lys Leu Val Gly Lys Leu Asn
 405 410 415
 Trp Ala Ser Gln Ile Tyr Pro Gly Ile Lys Val Arg Gln Leu Cys Lys
 420 425 430
 Leu Leu Arg Gly Ala Lys Ala Leu Thr Asp Ile Val Pro Leu Thr Glu
 435 440 445
 Glu Ala Glu Leu Glu Leu Ala Glu Asn Arg Glu Ile Leu Lys Glu Pro
 450 455 460
 Val His Gly Ala Tyr Tyr Asp Pro Ser Lys Glu Leu Ile Ala Glu Ile
 465 470 475 480
 Gln Lys Gln Gly Gln Asp Gln Trp Thr Tyr Gln Ile Tyr Gln Glu Pro
 485 490 495
 Phe Lys Asn Leu Lys Thr Gly Lys Tyr Ala Lys Met Arg Thr Ala His
 500 505 510
 Thr Asn Asp Val Lys Gln Leu Thr Glu Ala Val Gln Lys Ile Ala Met
 515 520 525

Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Ile	Pro	Lys	Phe	Arg	Leu	Pro	Ile	530	535	540	
Gln	Lys	Glu	Thr	Trp	Glu	Thr	Trp	Trp	Thr	Asp	Tyr	Trp	Gln	Ala	Thr	545	550	555	560
Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	Leu	Val	Lys	Leu	565	570	575	
Trp	Tyr	Gln	Leu	Glu	Lys	Asp	Pro	Ile	Ala	Gly	Val	Glu	Thr	Phe	Tyr	580	585	590	
Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Ile	Gly	Lys	Ala	Gly	Tyr	595	600	605	
Val	Thr	Asp	Arg	Gly	Arg	Lys	Lys	Ile	Val	Ser	Leu	Thr	Asp	Thr	Thr	610	615	620	
Asn	Gln	Lys	Thr	Glu	Leu	Gln	Ala	Ile	Tyr	Ile	Ala	Leu	Gln	Asp	Ser	625	630	635	640
Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	Ala	Leu	Gly	Ile	645	650	655	
Ile	Gln	Ala	Gln	Pro	Asp	Lys	Ser	Glu	Ser	Glu	Leu	Val	Asn	Gln	Ile	660	665	670	
Ile	Glu	Gln	Leu	Ile	Lys	Lys	Glu	Arg	Val	Tyr	Leu	Ser	Trp	Val	Pro	675	680	685	
Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	Lys	Leu	Val	Ser	690	695	700	
Asn	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	Asp	Lys	Ala	Gln	705	710	715	720
Glu	Glu	His	Glu	Lys	Tyr	His	Ser	Asn	Trp	Arg	Ala	Met	Ala	Ser	Asp	725	730	735	
Phe	Asn	Leu	Pro	Pro	Ile	Val	Ala	Lys	Glu	Ile	Val	Ala	Ser	Cys	Asp	740	745	750	
Gln	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	Val	Asp	Cys	Ser	755	760	765	
Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	Gly	Lys	Ile	Ile	770	775	780	
Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	Ala	Glu	Val	Ile	785	790	795	800
Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Ile	Leu	Lys	Leu	Ala	805	810	815	
Gly	Arg	Trp	Pro	Val	Lys	Val	Ile	His	Thr	Asp	Asn	Gly	Ser	Asn	Phe	820	825	830	

Thr Ser Ala Ala Val Lys Ala Ala Cys Trp Trp Ala Gly Ile Gln Gln
 835 840 845
 Glu Phe Gly Ile Pro Tyr Asn Pro Gln Ser Gln Gly Val Val Glu Ser
 850 855 860
 Met Asn Lys Glu Leu Lys Lys Leu Ile Gly Gln Val Arg Asp Gln Ala
 865 870 875 880
 Glu His Leu Lys Thr Ala Val Gln Met Ala Val Phe Ile His Asn Phe
 885 890 895
 Lys Arg Lys Gly Gly Ile Gly Gly Tyr Ser Ala Gly Glu Arg Ile Val
 900 905 910
 Asp Ile Ile Ala Thr Asp Ile Gln Thr Arg Glu Leu Gln Lys Gln Ile
 915 920 925
 Ile Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg Asp Ser Arg Asp Pro
 930 935 940
 Ile Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly Glu Gly Ala Val
 945 950 955 960
 Val Ile Gln Asp Asn Ser Asp Ile Lys Val Val Pro Arg Arg Lys Ala
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<210> 253
 <211> 1003
 <212> PRT
 <213> Human immunodeficiency virus

<400> 253
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 35 40 45
 Gly Ala Val Ser Leu Ser Phe Pro Gln Ile Thr Leu Trp Gln Arg Pro
 50 55 60
 Leu Val Thr Val Lys Ile Gly Gly Gln Leu Lys Glu Ala Leu Leu Asp
 65 70 75 80
 Thr Gly Ala Asp Asp Thr Val Leu Glu Glu Met Asn Leu Pro Gly Lys
 85 90 95

Trp	Lys	Pro	Lys 100	Met	Ile	Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys 110	Val	Arg
Gln	Tyr	Asp 115	Gln	Ile	Leu	Ile	Glu 120	Ile	Cys	Gly	Tyr	Lys 125	Ala	Ile	Gly
Thr	Val 130	Leu	Val	Gly	Pro	Thr 135	Pro	Val	Asn	Ile	Ile 140	Gly	Arg	Asn	Leu
Leu 145	Thr	Gln	Ile	Gly	Cys 150	Thr	Leu	Asn	Phe	Pro 155	Ile	Ser	Pro	Ile	Glu 160
Thr	Val	Pro	Val	Lys 165	Leu	Lys	Pro	Gly	Met 170	Asp	Gly	Pro	Lys	Val 175	Lys
Gln	Trp	Pro	Leu 180	Thr	Glu	Glu	Lys	Ile 185	Lys	Ala	Leu	Thr	Glu 190	Ile	Cys
Thr	Glu	Met 195	Glu	Lys	Glu	Gly	Lys 200	Ile	Ser	Arg	Ile	Gly 205	Pro	Glu	Asn
Pro	Tyr 210	Asn	Thr	Pro	Ile	Phe 215	Ala	Ile	Lys	Lys	Lys 220	Asp	Ser	Thr	Lys
Trp 225	Arg	Lys	Leu	Val	Asp 230	Phe	Arg	Glu	Leu	Asn 235	Lys	Arg	Thr	Gln	Asp 240
Phe	Trp	Glu	Val	Gln 245	Leu	Gly	Ile	Pro	His 250	Pro	Ala	Gly	Leu	Lys 255	Lys
Lys	Lys	Ser 260	Val	Thr	Val	Leu	Asp 265	Val	Gly	Asp	Ala	Tyr	Phe 270	Ser	Val
Pro	Leu	Tyr 275	Glu	Asp	Phe	Arg	Lys 280	Tyr	Thr	Ala	Phe	Thr 285	Ile	Pro	Ser
Ile 290	Asn	Asn	Glu	Thr	Pro	Gly 295	Ile	Arg	Tyr	Gln	Tyr 300	Asn	Val	Leu	Pro
Gln 305	Gly	Trp	Lys	Gly	Ser 310	Pro	Ala	Ile	Phe	Gln 315	Ser	Ser	Met	Thr	Lys 320
Ile	Leu	Glu	Pro	Phe 325	Arg	Lys	Gln	Asn 330	Pro	Glu	Met	Val	Ile	Tyr 335	Gln
Tyr	Met	Asp 340	Asp	Leu	Tyr	Val	Gly	Ser 345	Asp	Leu	Glu	Ile	Gly 350	Gln	His
Arg	Ile	Lys 355	Ile	Glu	Glu	Leu	Arg 360	Gly	His	Leu	Leu	Lys 365	Trp	Gly	Phe
Thr	Thr 370	Pro	Asp	Lys	Lys	His 375	Gln	Lys	Glu	Pro	Pro 380	Phe	Leu	Trp	Met
Gly 385	Tyr	Glu	Leu	His 390	Pro	Asp	Lys	Trp	Thr	Val 395	Gln	Pro	Ile	Gln	Leu 400

Pro	Glu	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	Gly	
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Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Arg	Gln	
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				435					440					445		
Leu	Thr	Glu	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	Leu	
				450					455					460		
Lys	Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	Ile	
				465					470					475		
Ala	Glu	Ile	Gln	Lys	Gln	Gly	Gln	Asp	Gln	Trp	Thr	Tyr	Gln	Ile	Tyr	
				485					490					495		
Gln	Glu	Pro	His	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Lys	Arg	Arg	
				500					505					510		
Thr	Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Ala	Val	Gln	Lys	
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Ile	Ala	Gln	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	Arg	
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Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	Leu	
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Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Lys	Glu	Pro	Ile	Val	Gly	Ala	Glu	
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Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Leu	Gly	Lys	
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Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Val	Ile	Ser	Ile	Thr	
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Asp	Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	Gln	Ala	Ile	Asn	Leu	Ala	Leu	
				625					630					635		
Gln	Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	Ala	
				645					650					655		
Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Lys	Ser	Glu	Ser	Glu	Leu	Val	
				660					665					670		
Asn	Gln	Ile	Ile	Glu	Gln	Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu	Ser	
				675					680					685		
Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	Lys	
				690					695					700		

Leu	Val	Ser	Ser	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	Asp	705	710	715	720
Lys	Ala	Gln	Glu	Glu	His	Glu	Lys	Tyr	His	Asn	Asn	Trp	Arg	Ala	Met	725	730	735	
Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Val	Val	Ala	Lys	Glu	Ile	Val	Ala	740	745	750	
Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Leu	His	Gly	Gln	Val	755	760	765	
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Lys	Leu	Ala	Gly	Arg	Trp	Pro	Val	Lys	Val	Val	His	Thr	Asp	Asn	Gly	820	825	830	
Ser	Asn	Phe	Thr	Ser	Ala	Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala	Gly	835	840	845	
Ile	Lys	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly	Val	850	855	860	
Val	Glu	Ser	Met	Asn	Lys	Glu	Leu	Lys	Lys	Ile	Ile	Gly	Gln	Val	Arg	865	870	875	880
Asp	Gln	Ala	Glu	His	Leu	Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe	Ile	885	890	895	
His	Asn	Phe	Lys	Arg	Lys	Gly	Gly	Ile	Gly	Gly	Tyr	Ser	Ala	Gly	Glu	900	905	910	
Arg	Ile	Ile	Asp	Ile	Ile	Ala	Thr	Asp	Ile	Gln	Thr	Lys	Glu	Leu	Gln	915	920	925	
Lys	Gln	Ile	Ile	Lys	Ile	Gln	Asn	Phe	Arg	Val	Tyr	Tyr	Arg	Asp	Ser	930	935	940	
Arg	Asp	Pro	Ile	Trp	Lys	Gly	Pro	Ala	Lys	Leu	Leu	Trp	Lys	Gly	Glu	945	950	955	960
Gly	Ala	Val	Val	Ile	Gln	Asp	Asn	Ser	Asp	Ile	Lys	Val	Val	Pro	Arg	965	970	975	
Arg	Lys	Val	Lys	Ile	Ile	Lys	Asp	Tyr	Gly	Lys	Gln	Met	Ala	Gly	Ala	980	985	990	
Asp	Cys	Val	Ala	Ser	Arg	Gln	Asp	Glu	Asp	Gln						995	1000		

<210> 254
<211> 3000
<212> DNA
<213> Human immunodeficiency virus

<400> 254

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gtgaaggtga	tccacaccga	caacggctcc	aacttcacct	ccgccgccgt	gaaggccgcc	2520
tgctggtggg	ccggcatcca	gcaggagtcc	ggcatccct	acaaccccc	gtcccagggc	2580
gtggtggagt	ccatgaacaa	ggagctgaag	aagctgatcg	gccagggtgcg	cgaccaggcc	2640
gagcacctga	agaccgccgt	gcagatggcc	gtgttcaccc	acaacttcaa	gcgcaagggc	2700
ggcatcggcg	gctactccgc	cggcgagcgc	atcgtggaca	tcatcgccac	cgacatccag	2760
acccgcgagc	tgcagaagca	gatcatcaag	atccagaact	tccgcgtgta	ctaccgcgac	2820
tcccgcgacc	ccatctggaa	gggccccgcc	aagctgctgt	ggaagggcga	gggcgccgtg	2880
gtgatccagg	acaactccga	catcaaggtg	gtgccccgcc	gcaaggccaa	gatcatcaag	2940

gactacggca agcagatggc cggcgccgac tgcgtggccg gccgccagga cgaggactaa 3000

<210> 255

<211> 3009

<212> DNA

<213> Human immunodeficiency virus

<400> 255

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acccgcgcca	actccccac	ctcccgagag	ctgcgcgtgt	ggggcggcga	caacaccttg	120
tccgagaccg	gcgccgagcg	ccagggcgcc	gtgtccctgt	ccttccccca	gatcaccttg	180
tggcagcgcc	ccctggtgac	cgtgaagatc	ggcgccagc	tgaaggaggc	cctgctggac	240
accggcgccg	acgacaccgt	gctggaggag	atgaacctgc	ccggcaagtg	gaagcccaag	300
atgatcggcg	gcacgcggcg	cttcatcaag	gtgcgccagt	acgaccagat	cctgatcgag	360
atctgcggct	acaaggccat	cggcaccgtg	ctggtgggcc	ccacccccgt	gaacatcatc	420
ggcgcgaacc	tgctgaccca	gatcggctgc	accctgaact	tccccatctc	ccccatcgag	480
accgtgcccc	tgaagctgaa	gcccggcatg	gacggcccca	aggtgaagca	gtggcccctg	540
accgaggaga	agatcaaggc	cctgaccgag	atctgcaccg	agatggagaa	ggagggcaag	600
atctcccgca	tcggccccga	gaacccctac	aacaccccc	tcttcgccat	caagaagaag	660
gactccacca	agtggcgcaa	gctggtggac	ttccgcgagc	tgaacaagcg	caccagggac	720
ttctgggagg	tgcagctggg	catccccac	cccgcgggcc	tgaagaagaa	gaagtccgtg	780
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tacaccgcct	tcaccatccc	ctccatcaac	aacgagaccc	ccggcatccg	ctaccagtac	900
aacgtgctgc	cccagggtcg	gaagggtccc	cccgccatct	tccagtcctc	catgaccaag	960
atcctggagc	ccttcgcgaa	gcagaacccc	gagatggtga	tctaccagta	catggacgac	1020
ctgtacgtgg	gtcccgcact	ggagatcgcc	cagcaccgca	tcaagatcga	ggagctgcgc	1080
ggccacctgc	tgaagtgggg	cttcaccacc	cccgacaaga	agcaccagaa	ggagcccccc	1140
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gcctcccaga	tctaccccgg	catcaagggtg	cgccagctgt	gcaagctgct	gcgcggcgcc	1320
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gccgagatcc	agaagcaggg	ccaggaccag	tggacctacc	agatctacca	ggagccccac	1500
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cagctgaccg	aggccgtgca	gaagatcgcc	caggagtcca	tcgtgatctg	gggcaagacc	1620
cccaagtctc	gcctgcccac	ccagaaggag	acctgggaga	cctggtggac	cgactactgg	1680
caggccacct	ggatccccga	gtgggagttc	gtgaacaccc	cccccttgt	gaagctgtgg	1740
taccagctgg	agaaggagcc	catcgtgggc	gccgagacct	tctacgtgga	cggcgccgcc	1800
aaccgcgaga	ccaagctggg	caaggccggc	tacgtgaccg	accgcggccg	ccagaagggtg	1860
atctccatca	ccgacaccac	caaccagaag	accgagctgc	aggccatcaa	cctggccctg	1920
caggactccg	gtcgcgaggt	gaacatcgtg	accgactccc	agtacgccct	gggcatcatc	1980
caggcccagc	ccgacaagtc	cgagtccgag	ctggtgaacc	agatcatcga	gcagctgac	2040
aagaaggaga	aggtgtacct	gtcctgggtg	cccgccaca	agggcatcgg	cggcaacgag	2100
caggtggaca	agctggtgtc	ctccggcatc	cgcaagggtg	tgttcctgga	cggcatcgac	2160
aaggcccagg	aggagcacga	gaagtaccac	aacaactggc	gcgccatggc	ctccgacttc	2220
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ggcgaggccc	tgcacggcca	ggtggactgc	tcccccgga	tctggcagct	ggactgcacc	2340
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gaggtgatcc	ccgccgagac	cggccaggag	accgcctact	tctgtctgaa	gctggccggc	2460
cgctggcccc	tgaagggtgt	gcacaccgac	aacggctcca	acttcacctc	cgccgcctgt	2520
aaggccgcct	gctggtgggc	cggcatcaag	caggagtctg	gcacccccca	caacccccag	2580
tcccagggcg	tgggtggagt	catgaacaag	gagctgaaga	agatcatcgg	ccaggtgcgc	2640
gaccaggccg	agcacctgaa	gaccgcctg	cagatggccg	tgttcatcca	caacttcaag	2700
cgcaagggcg	gcacgcggcg	ctactccgcc	ggcgagcgca	tcatcgacat	catcgccacc	2760
gacatccaga	ccaaggagct	gcagaagcag	atcatcaaga	tccagaactt	ccgcgtgtac	2820
taccgcgact	cccgcgaccc	catctggaag	ggccccgcca	agctgctgtg	gaagggcgag	2880

ggcgccgtgg tgatccagga caactccgac atcaaggtgg tgccccgccg caaggtgaag 2940
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 gaggaccag 3009

<210> 256

<211> 1002

<212> PRT

<213> Human immunodeficiency virus

<400> 256

Phe Phe Arg Glu Asn Leu Ala Phe Gln Gln Gly Glu Ala Arg Glu Phe
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Ser Pro Glu Gln Ala Arg Ala Asn Ser Pro Thr Ser Arg Glu Leu Arg
 20 25 30

Val Arg Gly Gly Asp Ser Pro Leu Pro Glu Thr Gly Ala Glu Gly Glu
 35 40 45

Gly Ala Ile Ser Phe Asn Phe Pro Gln Ile Thr Leu Trp Gln Arg Pro
 50 55 60

Leu Val Thr Ile Lys Val Ala Gly Gln Leu Lys Glu Ala Leu Leu Asp
 65 70 75 80

Thr Gly Ala Asp Asp Thr Val Leu Glu Glu Ile Asp Leu Pro Gly Arg
 85 90 95

Trp Lys Pro Lys Met Ile Gly Gly Ile Gly Gly Phe Ile Lys Val Arg
 100 105 110

Gln Tyr Glu Glu Ile Ile Ile Glu Ile Glu Gly Lys Lys Ala Ile Gly
 115 120 125

Thr Val Leu Val Gly Pro Thr Pro Val Asn Ile Ile Gly Arg Asn Met
 130 135 140

Leu Thr Gln Ile Gly Cys Thr Leu Asn Phe Pro Ile Ser Pro Ile Asp
 145 150 155 160

Thr Val Pro Val Lys Leu Lys Pro Gly Met Asp Gly Pro Lys Val Lys
 165 170 175

Gln Trp Pro Leu Thr Glu Glu Lys Ile Lys Ala Leu Thr Glu Ile Cys
 180 185 190

Thr Glu Met Glu Lys Glu Gly Lys Ile Ser Lys Ile Gly Pro Glu Asn
 195 200 205

Pro Tyr Asn Thr Pro Val Phe Ala Ile Lys Lys Lys Asp Ser Thr Lys
 210 215 220

Trp Arg Lys Leu Val Asp Phe Arg Glu Leu Asn Lys Arg Thr Gln Asp
 225 230 235 240

Phe Trp Glu Val Gln Leu Gly Ile Pro His Pro Ala Gly Leu Lys Lys

245																250								255			
Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	Val												
			260					265						270													
Pro	Leu	Asp	Glu	Ser	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser												
			275					280						285													
Ile	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	Pro												
			290					295						300													
Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	Lys												
305							310						315														
Ile	Leu	Glu	Pro	Phe	Arg	Thr	Gln	Asn	Pro	Glu	Ile	Val	Ile	Tyr	Gln												
							325						330			335											
Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln	His												
			340							345						350											
Arg	Glu	Lys	Val	Glu	Glu	Leu	Arg	Lys	His	Leu	Leu	Lys	Trp	Gly	Phe												
			355							360						365											
Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	Met												
370							375						380														
Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Gln	Leu												
385							390						395														
Pro	Asp	Lys	Glu	Cys	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	Gly												
			405							410						415											
Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Lys	Gln												
			420							425						430											
Leu	Cys	Lys	Leu	Leu	Arg	Gly	Thr	Lys	Ala	Leu	Thr	Asp	Ile	Val	Pro												
			435							440						445											
Leu	Thr	Ala	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile	Leu												
450							455						460														
Lys	Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu	Ile												
465							470						475														
Ala	Glu	Val	Gln	Lys	Gln	Gly	Leu	Asp	Gln	Trp	Thr	Tyr	Gln	Ile	Tyr												
			485							490						495											
Gln	Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Lys	Arg	Arg												
			500							505						510											
Thr	Ala	His	Thr	Asn	Asp	Val	Arg	Gln	Leu	Ala	Glu	Val	Val	Gln	Lys												
			515							520						525											
Ile	Ser	Met	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Ile	Pro	Lys	Phe	Arg												
530							535						540														
Leu	Pro	Ile	Gln	Arg	Glu	Thr	Trp	Glu	Thr	Trp	Trp	Thr	Asp	Tyr	Trp												

545		550		555		560									
Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	Leu
				565					570					575	
Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Lys	Glu	Pro	Ile	Ile	Gly	Ala	Glu
			580					585					590		
Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ala	Asn	Arg	Glu	Thr	Lys	Leu	Gly	Lys
		595					600					605			
Ala	Gly	Tyr	Val	Thr	Asp	Lys	Gly	Arg	Gln	Lys	Val	Val	Thr	Leu	Thr
	610					615					620				
Glu	Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	Glu	Ala	Ile	His	Leu	Ala	Leu
625					630					635					640
Gln	Asp	Ser	Gly	Leu	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	Ala
				645					650					655	
Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Lys	Ser	Glu	Ser	Glu	Leu	Val
			660					665					670		
Ser	Gln	Ile	Ile	Glu	Gln	Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu	Ser
		675					680					685			
Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	Lys
	690					695					700				
Leu	Val	Ser	Ser	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	Asp
705					710					715					720
Lys	Ala	Gln	Glu	Glu	His	Glu	Arg	Tyr	His	Ser	Asn	Trp	Arg	Ala	Met
				725					730					735	
Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Ile	Val	Ala	Lys	Glu	Ile	Val	Ala
			740					745					750		
Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	Val
		755					760					765			
Asp	Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	Gly
	770					775					780				
Lys	Ile	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	Ala
785					790					795					800
Glu	Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Ile	Leu
				805					810					815	
Lys	Leu	Ala	Gly	Arg	Trp	Pro	Val	Lys	Val	Ile	His	Thr	Asp	Asn	Gly
			820					825					830		
Ser	Asn	Phe	Thr	Ser	Ala	Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala	Asn
		835					840					845			
Ile	Gln	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly	Val

850	855	860
Val Glu Ser Met Asn Lys Glu Leu Lys Lys Ile Ile Gly Gln Val Arg		
865	870	875 880
Glu Gln Ala Glu His Leu Lys Thr Ala Val Gln Met Ala Val Phe Ile		
	885	890 895
His Asn Phe Lys Arg Lys Gly Gly Ile Gly Gly Tyr Ser Ala Gly Glu		
	900	905 910
Arg Ile Val Asp Ile Ile Ala Thr Asp Leu Gln Thr Lys Glu Leu Gln		
	915	920 925
Lys Gln Ile Thr Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg Asp Ser		
	930	935 940
Arg Asp Pro Ile Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly Glu		
	945	950 955 960
Gly Ala Val Val Ile Gln Asp Asn Ser Asp Ile Lys Val Val Pro Arg		
	965	970 975
Arg Lys Ala Lys Ile Ile Arg Asp Tyr Gly Lys Gln Met Ala Gly Asp		
	980	985 990
Asp Cys Val Ala Gly Arg Gln Asp Glu Asp		
	995	1000

<210> 257
 <211> 1003
 <212> PRT
 <213> Human immunodeficiency virus

<400> 257															
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Pro	Ser	Glu	Gln	Ala	Arg	Ala	Asn	Ser	Pro	Ala	Ser	Arg	Glu	Leu	Trp
			20					25					30		
Val	Arg	Arg	Gly	Asp	Asn	Pro	Leu	Ser	Glu	Ala	Gly	Ala	Glu	Arg	Arg
			35				40					45			
Gly	Thr	Val	Pro	Ser	Leu	Ser	Phe	Pro	Gln	Ile	Thr	Leu	Trp	Gln	Arg
			50			55					60				
Pro	Leu	Val	Thr	Ile	Lys	Val	Gly	Gly	Gln	Leu	Lys	Glu	Ala	Leu	Leu
	65				70					75					80
Asp	Thr	Gly	Ala	Asp	Asp	Thr	Val	Leu	Glu	Asp	Ile	Asn	Leu	Pro	Gly
				85					90					95	
Lys	Trp	Lys	Pro	Lys	Met	Ile	Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys	Val
			100					105					110		

Lys 115	Gln	Tyr	Asp	Asn	Ile	Leu	Ile	Glu	Ile	Cys	Gly	His	Lys	Ala	Ile
Gly 130	Thr	Val	Leu	Val	Gly	Pro	Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn
Leu 145	Leu	Thr	Gln	Leu	Gly	Cys	Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile
Glu	Thr	Val	Pro	Val	Lys	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Val
Lys	Gln	Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Glu	Ile
Cys	Thr	Glu	Met	Glu	Lys	Glu	Gly	Lys	Ile	Ser	Lys	Ile	Gly	Pro	Glu
Asn	Pro	Tyr	Asn	Thr	Pro	Val	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr
Lys 225	Trp	Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln
Asp	Phe	Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys
Lys	Lys	Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser
Val	Pro	Leu	Asp	Lys	Asp	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro
Ser 290	Val	Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu
Pro 305	Gln	Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr
Lys	Ile	Leu	Glu	Pro	Phe	Arg	Lys	Gln	Asn	Pro	Asp	Ile	Val	Ile	Tyr
Gln	Tyr	Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Gly	Gln
His	Arg	Thr	Lys	Ile	Glu	Glu	Leu	Arg	Gln	His	Leu	Leu	Arg	Trp	Gly
Phe	Thr	Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp
Met 385	Gly	Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Val
Leu	Pro	Glu	Lys	Asp	Ser	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val

Gly	Lys	Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Val	Lys		
			420					425					430				
Gln	Leu	Cys	Arg	Leu	Leu	Arg	Gly	Thr	Lys	Ala	Leu	Thr	Glu	Val	Ile		
		435					440					445					
Pro	Leu	Thr	Lys	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Arg	Glu	Ile		
	450					455					460						
Leu	Lys	Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ser	Lys	Asp	Leu		
465					470					475					480		
Ile	Ala	Glu	Ile	Gln	Lys	Gln	Gly	Gln	Gly	Gln	Trp	Thr	Tyr	Gln	Ile		
				485					490					495			
Tyr	Gln	Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Arg	Met		
			500					505					510				
Arg	Gly	Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Thr	Glu	Ala	Val	Gln		
		515					520					525					
Lys	Ile	Thr	Thr	Glu	Ser	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe		
	530					535					540						
Arg	Leu	Pro	Ile	Leu	Lys	Glu	Thr	Trp	Asp	Thr	Trp	Trp	Thr	Glu	Tyr		
545					550					555					560		
Trp	Gln	Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro		
				565					570					575			
Leu	Val	Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Thr	Glu	Pro	Ile	Ala	Gly	Ala		
			580					585					590				
Glu	Thr	Phe	Tyr	Val	Asp	Gly	Ala	Ser	Asn	Arg	Glu	Thr	Lys	Lys	Gly		
		595					600					605					
Lys	Ala	Gly	Tyr	Val	Thr	Asp	Arg	Gly	Arg	Gln	Lys	Ala	Val	Ser	Leu		
	610					615					620						
Thr	Glu	Thr	Thr	Asn	Gln	Lys	Ala	Glu	Leu	His	Ala	Ile	Gln	Leu	Ala		
625					630					635					640		
Leu	Gln	Asp	Ser	Gly	Ser	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr		
				645					650					655			
Ala	Leu	Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Lys	Ser	Glu	Ser	Glu	Leu		
			660					665					670				
Val	Asn	Gln	Ile	Ile	Glu	Gln	Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu		
		675					680					685					
Ser	Trp	Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp		
	690					695					700						
Lys	Leu	Val	Ser	Ala	Gly	Ile	Arg	Lys	Ile	Leu	Phe	Leu	Asp	Gly	Ile		
705					710					715					720		

Asp	Lys	Ala	Gln	Glu	Glu	His	Glu	Lys	Tyr	His	Asn	Asn	Trp	Arg	Ala		
				725					730					735			
Met	Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro	Val	Val	Ala	Lys	Glu	Ile	Val		
			740					745					750				
Ala	Ser	Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln		
		755					760					765					
Val	Asp	Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu		
	770					775					780						
Gly	Lys	Ile	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Leu	Glu		
785				790						795					800		
Ala	Glu	Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Thr	Ala	Tyr	Phe	Ile		
				805					810					815			
Leu	Lys	Leu	Ala	Gly	Arg	Trp	Pro	Val	Lys	Thr	Ile	His	Thr	Asp	Asn		
			820					825						830			
Gly	Pro	Asn	Phe	Ser	Ser	Ala	Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala		
		835					840					845					
Gly	Ile	Gln	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly		
	850					855					860						
Val	Val	Glu	Ser	Met	Asn	Lys	Glu	Leu	Lys	Lys	Ile	Ile	Arg	Gln	Val		
865					870					875					880		
Arg	Asp	Gln	Ala	Glu	His	Leu	Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe		
				885					890					895			
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<210> 258

<211> 3009

<212> DNA

<213> Human immunodeficiency virus

<400> 258

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<210> 259
<211> 3012
<212> DNA
<213> Human immunodeficiency virus

<400> 259

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<210> 260
<211> 1002
<212> PRT
<213> Human immunodeficiency virus

<400> 260

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35 40 45

Gly Asp Ile Pro Leu Ser Leu Pro Gln Ile Thr Leu Trp Gln Arg Pro
50 55 60

Leu Val Thr Val Arg Ile Gly Gly Gln Leu Ile Glu Ala Leu Leu Asp
65 70 75 80

Thr Gly Ala Asp Asp Thr Val Leu Glu Asp Ile Asn Leu Pro Gly Lys
85 90 95

Trp Lys Pro Lys Met Ile Gly Gly Ile Gly Gly Phe Ile Lys Val Arg
100 105 110

Gln Tyr Asp Gln Ile Leu Ile Glu Ile Cys Gly Lys Lys Ala Ile Gly
115 120 125

Thr Val Leu Val Gly Pro Thr Pro Ile Asn Ile Ile Gly Arg Asn Met
130 135 140

Leu Thr Gln Ile Gly Cys Thr Leu Asn Phe Pro Ile Ser Pro Ile Glu
145 150 155 160

Thr Val Pro Val Lys Leu Lys Pro Gly Met Asp Gly Pro Lys Val Lys
165 170 175

Gln Trp Pro Leu Thr Glu Glu Lys Ile Lys Ala Leu Thr Asp Ile Cys
180 185 190

Thr Glu Met Glu Arg Glu Gly Lys Ile Ser Lys Ile Gly Pro Glu Asn
195 200 205

Pro Tyr Asn Thr Pro Ile Phe Ala Ile Lys Lys Lys Asp Ser Thr Lys
210 215 220

Trp Arg Lys Leu Val Asp Phe Arg Glu Leu Asn Lys Arg Thr Gln Asp
225 230 235 240

Phe Trp Glu Val Gln Leu Gly Ile Pro His Pro Ser Gly Leu Lys Lys
245 250 255

Lys Lys Ser Val Thr Val Leu Asp Val Gly Asp Ala Tyr Phe Ser Val

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<210> 261
 <211> 3009
 <212> DNA
 <213> Human immunodeficiency virus

<400> 261

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<210> 263
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 Lys Asn Ser Ser Glu Tyr Tyr Arg Leu Ile Asn Cys Asn Thr Ser
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<210> 264
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<210> 265
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Cys Pro Lys Val Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala
1 5 10 15

<210> 266
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Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe
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<210> 267
<211> 15
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Glu Thr Ile Thr Leu Pro Cys Arg Ile Lys Gln Ile Ile Asn Met
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Val Gln Gln Ser Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu
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<211> 17

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Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu
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Gln

<210> 273

<211> 16

<212> PRT

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<400> 273

Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu
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<211> 15

<212> PRT

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Ala Lys Ala Tyr Asp Thr Glu Val His Asn Val Trp Ala Thr Gln
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<210> 275

<211> 15

<212> PRT

<213> Human immunodeficiency virus

<400> 275

Asp Thr Glu Val His Asn Val Trp Ala Thr Gln Ala Cys Val Pro
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Ala Cys Pro Lys Ile Ser Phe Glu Pro Ile Pro Ile His Tyr Cys
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<210> 277
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<400> 277
Ile Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly
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<210> 278
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Arg Lys Arg Ile His Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr
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<400> 279
His Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Lys Asn Ile Ile
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<210> 280
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<213> Human immunodeficiency virus

<400> 281

Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Met Leu
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<210> 282

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<212> PRT

<213> Human immunodeficiency virus

<400> 282

Val Pro Val Trp Lys Glu Ala Lys Thr Thr Leu Phe Cys Ala Ser Asp
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Ala Lys Ser Tyr
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<210> 283

<211> 20

<212> PRT

<213> Human immunodeficiency virus

<400> 283

Gly Lys Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr
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Asp Pro Asn Pro
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<210> 284

<211> 20

<212> PRT

<213> Human immunodeficiency virus

<400> 284

Ser Ser Glu Asn Ser Ser Glu Tyr Tyr Arg Leu Ile Asn Cys Asn Thr
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Ser Ala Ile Thr
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<210> 285

<211> 20

<212> PRT

<213> Human immunodeficiency virus

<400> 285

Ser Thr Val Gln Cys Thr His Gly Ile Lys Pro Val Val Ser Thr Gln
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Leu Leu Leu Asn
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<211> 20
<212> PRT
<213> Human immunodeficiency virus

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Gln Leu Thr Val
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<210> 287
<211> 20
<212> PRT
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<400> 287
Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu
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Gln Thr Arg Val
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<211> 15
<212> PRT
<213> Human immunodeficiency virus

<400> 288
Gly Ile Gln Arg Asn Cys Gln His Leu Trp Arg Trp Gly Thr Met
1 5 10 15

<210> 289
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<400> 289
Asn Cys Gln His Leu Trp Arg Trp Gly Thr Met Ile Leu Gly Met
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<210> 290
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<400> 290
Asp Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro
1 5 10 15

<210> 291
<211> 15

<212> PRT
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<400> 291
Cys Pro Lys Val Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala
1 5 10 15

<210> 292
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<213> Human immunodeficiency virus

<400> 292
Phe Tyr Cys Asn Thr Ser Gly Leu Phe Asn Ser Thr Trp Met Phe
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<210> 293
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Phe Asn Ser Thr Trp Met Phe Asn Gly Thr Tyr Met Phe Asn Gly
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<210> 294
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Gly Ile Arg Arg Asn Tyr Gln His Trp Trp Gly Trp Gly Thr Met
1 5 10 15

<210> 295
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<213> Human immunodeficiency virus

<400> 295
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<210> 296
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Asn Met Trp Lys Asn Asn Met Val Glu Gln Met His Glu Asp Ile
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<210> 297
<211> 15
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<213> Human immunodeficiency virus

<400> 297
Ile Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly
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<400> 298
Asn Ile Ile Gly Thr Ile Arg Gln Ala His Cys Asn Ile Ser Arg
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<210> 299
<211> 15
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<400> 299
Thr Ile Arg Gln Ala His Cys Asn Ile Ser Arg Ala Lys Trp Asn
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<210> 300
<211> 20
<212> PRT
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<400> 300
Met Arg Val Thr Gly Ile Arg Lys Asn Tyr Gln His Leu Trp Arg Trp
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Gly Thr Met Leu
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<210> 301
<211> 18
<212> PRT
<213> Human immunodeficiency virus

<400> 301
Arg Trp Gly Thr Met Leu Leu Gly Met Leu Met Ile Cys Ser Ala Ala
1 5 10 15

Glu Asn

<210> 302
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<212> PRT
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<400> 302
Gly Lys Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr
1 5 10 15
Asp Pro Asn Pro
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<210> 303
<211> 20
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<400> 303
Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser Lys Asp Lys Trp Asn
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Glu Thr Leu Gln
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<210> 304
<211> 20
<212> PRT
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<400> 304
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Val Pro Trp Asn
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<220>
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17

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<220>
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<400> 306
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<210> 307
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<220>
 <223> Description of Artificial Sequence: Synthetic
 Oligonucleotide

<400> 307
 taaagatcctt acaa 14

<210> 308
 <211> 16
 <212> PRT
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<400> 308
 Lys Gln Ile Ile Asn Met Trp Gln Val Val Gly Lys Ala Met Tyr Ala
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<210> 309
 <211> 36
 <212> PRT
 <213> Human immunodeficiency virus

<400> 309
 Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr
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Thr Asn Val Asn Val Thr Asn Thr Thr Asn Asn Thr Glu Glu Lys Gly
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Glu Ile Lys Asn
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<210> 310
 <211> 49
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 <213> Human immunodeficiency virus

<400> 310
 Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr
 1 5 10 15

Thr Glu Ile Arg Asp Lys Lys Gln Lys Val Tyr Ala Leu Phe Tyr Arg

	20		25		30
Leu	Asp	Val	Val	Pro	Ile
	35		40		45
Asp	Asn	Asn	Asn	Asn	Ser
Ser	Asn	Tyr			

Arg

<210> 311
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 <212> PRT
 <213> Human immunodeficiency virus

Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	Ile	Val	Arg	Met	Tyr
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Thr	Arg	Pro	Asn	Asn	Asn	Thr	Arg	Lys	Ser	Ile	Arg	Ile	Gly	Pro	Gly
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Gln	Ala	Phe	Tyr	Ala	Thr
		35			

<210> 312
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 <212> PRT
 <213> Human immunodeficiency virus

Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	Ile	Val	Arg	Met	Tyr
1			5					10					15		

Asn	Thr	Ser	Gly	Leu	Phe	Asn	Ser	Thr	Trp	Ile	Gly	Asn	Gly	Thr	Lys
			20				25						30		

Asn	Asn	Asn	Asn	Thr	Asn	Asp	Thr	Ile	Thr	Leu	Pro
		35				40					

<210> 313
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Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	Ile	Val	Arg	Met	Tyr
1			5					10					15		

Arg	Asp	Gly	Gly	Asn	Asn	Asn	Thr	Asn	Glu	Thr	Glu	Ile	Phe	Arg	Pro
			20				25						30		

Gly	Gly	Gly	Asp
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<210> 314
<211> 35
<212> PRT
<213> Human immunodeficiency virus

<400> 314
Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr
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Asn Val Arg Asn Val Ser Ser Asn Gly Thr Glu Thr Asp Asn Glu Glu
20 25 30
Ile Lys Asn
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<210> 315
<211> 56
<212> PRT
<213> Human immunodeficiency virus

<400> 315
Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr
1 5 10 15
Thr Glu Leu Arg Asp Lys Lys Gln Lys Val Tyr Ala Leu Phe Tyr Arg
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Leu Asp Val Val Pro Ile Asp Asp Lys Asn Ser Ser Glu Ile Ser Gly
35 40 45
Lys Asn Ser Ser Glu Tyr Tyr Arg
50 55

<210> 316
<211> 38
<212> PRT
<213> Human immunodeficiency virus

<400> 316
Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr
1 5 10 15
Thr Arg Pro Asn Asn Asn Thr Arg Lys Ser Ile His Ile Gly Pro Gly
20 25 30
Gln Ala Phe Tyr Ala Thr
35

<210> 317
<211> 47
<212> PRT
<213> Human immunodeficiency virus

<400> 317

Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr
1 5 10 15

Asn Thr Ser Gly Leu Phe Asn Ser Thr Trp Met Phe Asn Gly Thr Tyr
20 25 30

Met Phe Asn Gly Thr Lys Asp Asn Ser Glu Thr Ile Thr Leu Pro
35 40 45

<210> 318

<211> 37

<212> PRT

<213> Human immunodeficiency virus

<400> 318

Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr
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Arg Asp Gly Gly Asn Asn Ser Asn Lys Asn Lys Thr Glu Thr Phe Arg
20 25 30

Pro Gly Gly Gly Asp
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<210> 319

<211> 4

<212> PRT

<213> Human immunodeficiency virus

<400> 319

Arg Glu Lys Arg
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<210> 320

<211> 26

<212> PRT

<213> Human immunodeficiency virus

<400> 320

Tyr Ile Lys Ile Phe Ile Met Ile Val Gly Gly Leu Ile Gly Leu Arg
1 5 10 15

Ile Val Phe Ala Val Leu Ser Ile Val Asn
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<210> 321

<211> 7

<212> PRT

<213> Human immunodeficiency virus

<400> 321

Glu Leu Asp Lys Trp Ala Ser
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